DEVELOPING A READING PROGRAMME THROUGH AN ACTION RESEARCH IN A SECONDARY SCHOOL

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DECLARATION

I certify that this dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university and that to the best of my knowledge and belief, it does not contain any material previously published or written by another person where due reference is not made in the text.

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GLOSSARY

Aliteracy	Being unwilling to read.
Assessment	Any systematic basis for making inferences about students' learning progress.
Alternative Assessment	Assessment forms other than traditional standardised tests, criterion-referenced tests, worksheets or textbook questions.
Authentic Assessment	An assessment that engages students in challenges that closely represent what they are likely to face as everyday workers and citizens. It could be in the form of a performance test, a set of observations or open-ended questions, an exhibition or a portfolio.
Computer Literacy	The ability to accurately and effectively use computer tools such as word processors, spreadsheets, databases, presentation and graphic software.
Computer Technology Literacy	Having the ability to manipulate computer hardware.
Cooperative Planning	The process through which instruction is coordinated among the teacher, trainers and leaders of learning circles to provide information that meet the goals and objectives of individual units or section of STAR Project.
Cooperative Learning	A process through which students work together and help each other to enhance learning.
Critical Literacy	The ability to look at the meaning and purpose of written texts, visual applications and spoken words to question the attitudes, values and beliefs behind them. The goal is the development of critical thinking to discern meaning from an array of multimedia, visual imagery, virtual environments and written text.
Cross Disciplinary	Viewing one discipline from the perspective of another; for example, the physics of music and history of math.
Digital Literacy	The ability to attain deeper understanding of content by using data-analysis tools and technology-enabled accelerated learning processes.
Dimensions of learning	Statements made describing skills, abilities, knowledge and habits of mind to be demonstrated through curriculum development or authentic assessment representing essential elements within or across disciplines.

Discipline Field	A specific body of teachable knowledge with its own background of education, training, procedures, methods and contents areas.
Economic Literacy	The ability to know basic economic principles and concepts in order to understand and appreciate the cause and effect, and trade-offs in everyday lives. The goal is to understand a person's role as consumer, worker, saver and investor.
Flexible Learning	A term used to describe many learning systems. The word 'flexible' tends to emphasise the individualised nature of the programme: that it is designed to offer the maximum opportunity to every possible learner.
Genre	A category of literary work that is characterised by a style, content or form; examples of genres include picture books, short stories, poetry books, tall tales and mysteries.
Graphic Organiser	A visual representation of organising ideas or subject/topic information; examples of graphic organisers include webs, mind maps, clusters, K-W-L and outlines.
Group-Evaluation	An assessment tool completed by members of a group to evaluate a process, product or project.
Information Skill	Having the ability to gather and process information that is located in many diverse places.
Interdisciplinary	A knowledge view and curriculum approach that consciously applied methodology and language from more than one discipline to examine a central theme, issue, problem, topic or experience.
Illiteracy	Being unable to read.
Job Shadowing	An academically motivating activity designed to give students an up-close look at the workplace to see how the skills learned in school are related to the workplace. Popular in the United States, it is led by the National Job Shadow Coalition and is supported through a national sponsorship by Monster.com and co-sponsorship by News Corporation.
Kinaesthetic	Learners require movement and physical motion in order to absorb the information being presented to them.
KBE	The term knowledge-based economy or KBE was coined by the Organisation for Economic Co-operation and Development (OECD) in 1996. Knowledge in this context refers to technical competence primarily related to information processing and high tech communications. In the KBE, the ability to create and exploit knowledge is critical to the success of all high tech and traditional industries. The capacity to translate ideas into useful

	products and processes is increasingly becoming a major source of firms' competitive advantage and takes tremendous investment in human and physical capital.
K-W-L	A graphic organiser often used as a pre-search and culminating activity. The initials stand for the following: K- what students already Know about the topic; W- what students Want to know about the topic; and L- what students Learned about the topic.
Learning Log	A tool that provides individual student with a model for a self-managed record of development and achievement.
Media Literacy	The ability to communicate competently in all media forms—print and electronic—as well as access, understand, analyse and evaluate the images, words and sounds that comprise contemporary culture.
Menu	An on-screen listing of modules or choices in a programme which users may select.
Menu-driven programme	A computer programme that provides the user with choices on the screen. The user highlights the choice desired.
Mind Map	A graphic organiser for a topic. The topic is written within a circle. Lines are drawn from this main circle to other circles which contain subtopics related to the main topic. Mind maps and webs are often used interchangeably and may consist of either circles or lines or a combination of both.
Multiliteracies	The multiliteracies framework as proposed by The New London Group (1996) is concerned with developing a pedagogy that integrates the written with the visual, and with other modes of symbolic representations.
Multi Disciplinary	The juxtaposition of several disciplines focused on one problem with no direct attempt to integrate.
National Education	The process of cultivating a sense of national cohesion and the instinct for survival and confidence in the future of Singapore; this is done through sensitising students to past and present national issues to create awareness of nationhood and nation building.
New Literacy	Having the ability to sieve and resolve problems amidst a deluge of information in the Digital Age.
Network	A configuration of computers, linked by cables and interface cards, accessing a particular programme or datum at the same time. Networks are combinations of software and hardware.

Non-linear	Random presentations of facts or information which branches out as questions and needs of the group are addressed. Some skills and facts must be presented in a set or prescribed (linear) manner, but many skills do not require linear presentation.
Online	Peripherals that are directly tied into the Computer Processing Unit (CPU); for example, a workstation that is turned on and connected to the file server is online.
Open Learning	A wide range of learning opportunities that allow learners to gain better access to knowledge and skills; and have a degree of control over their own learning.
Peer-Evaluation	An assessment tool completed by peers within a class or group to evaluate a process, product or project.
Performance-based Assessment	A form of assessment that allows teachers to evaluate a student's skill by asking the student to perform tasks which require that skill. The student must perform with knowledge instead of merely recalling or recognising other people's knowledge. This is a subset of authentic assessment.
Portfolio	A sample collection of a student's work that can be used by the student to organise and gather researched information and activities sheets, and keep results of hand-on activities. Contents of portfolio are flexible and could be determined ahead of time by the student and the instructor. It is used as an evaluation tool of the student's learning process and product.
Pluridiscipline	The juxtaposition of disciplines assumed to be more or less related; for example math and physics, French and Latin.
Reflective Journal	A learning tool that enables students to create a record of the connections and meanings that they have learnt throughout the reading project.
Rubric	An evaluation tool which uses a set of criteria and a rating/scoring guide pre-determined by the evaluator(s). Rubric can be used to evaluate students' presentations, projects and portfolios.
Self-Evaluation	An assessment tool completed by a student to evaluate learning process, product or project.
Taxonomy	An orderly classification of divisions of a concept showing various levels and applications of the concept.
Thematic Unit	A unit of study that incorporates factual learning and information skills through selected theme across the

	curriculum. The STAR uses the theme 'Attitude for Success' to teach self, technological, moral, political functional and critical literacy.
Transdisciplinary	Beyond the scope of a single discipline; that is to start with a problem and bring to bear knowledge from other disciplines to solve the problem.
Web	A graphic organiser for a topic. First, a topic is placed within a circle. As information is gathered, lines are drawn stemming from the circle to show subtopics or facts about the topic. These lines may then have additional lines stemming from them with information supporting that subtopic or fact

LIST OF ABBREVIATIONS

AR	Action Research
ARP	Alternative Reading Programme
ASC	After School Care
AVA	Audio Visual Aids
BASC	Before and After School Care
BBM	Public Service Star Award (Bintang Bakti Masyarakat)
CA	Continual Assessment
CAR	Collaborative Action Research
CCA	Co-Curricular Activity
CDAC	Community Development Assistance for the Chinese
CL	Chinese Language
CME	Civics and Moral Education
CRP	Current Reading programme
DEAR	Drop Everything All Reading
EL	English Language
ERIL	Extensive Reading and Information Literacy
ERP	Extensive Reading Programme
ESSS	Electronic Staff Suggestion Scheme
FSC	Family Service Centre
FVR	Free Voluntary Reading
HOD	Head of Department
HDB	Housing Development Board
I&E	Innovation and Enterprise
ICT	Information Communication Technology
IT	Information Technology
iTopia	IT Opportunity, Innovations and Achievement in Education
JIT	Just in Time
KBE	Knowledge Based Economy
LCs	Learning Circles
LLRJ	Learning Log and Reflective Journal
LEEP	Loyang Environmental Education Project
LO	Learning Organisation
MENDAKI	Council for the Development of Singapore Muslim Community
MOE	Ministry of Education
ML	Malay Language
MM	Multi -Media
MP	Multi-Pedagogy
MRL	Media Resource Library
MP1	IT Master Plan 1
MP2	IT Master Plan 2
MT	Mother Tongue
NA	Normal Academic
NT	Normal Technical
NE	National Education
NGO	Non-Government Organisations
NLB	National Library Board
NTUC	National Trade Union Congress
PBL	Problem-Based Learning
PBM	Public Service Medal Award (Pingat Bakti Masyarakat)
PCCG	Pastoral Care and Career Guidance
PSG	Parent Support Group
PW	Pupil Welfare
PYSS	Ping Yi Secondary School
RES	Read, Evaluate and Share
SA	Semesteral Assessment

SAC	School Advisory Committee
SCWR	School Wide Action Research
SEM	School Excellent Model
SHG	Self-Help Group
SINDA	Singapore Indian Development Association
SKM	Singapore Kindness Movement
SMC	School Management Committee
SSR	Sustained Silent Reading
STAR	**S**triving for **T**otal **A**chievement and **R**esponsibility
TA	Technical Assistant
TAR	Teacher Action Research
TL	Tamil Language
TLLM	Teach Less Learn More
TSLN	Thinking School Learning Nation
TN	Teachers Network
USSR	Uninterrupted Sustained Silent Reading
WITs	Work Improvement Teams
ZPD	Zone of Proximal Development

ABSTRACT

The purpose of this study is to identify factors that could promote interest and motivation in reading among the non readers as part of Ping Yi Secondary School Media Resource Library's activities. It is an attempt to improve the current practice of reading enrichment programme by conducting a school-based action research, using technology to promote screen and conventional print-based reading. There are three tasks involved in this study. The first task is to investigate the reasons as to why students are not keen to actively read during the library's enrichment reading programme.

The second task is to explore the factors and the context that would motivate students to read. This is achieved through the review of literature and interview with students and teachers. Based on the findings of these two tasks, an alternative enrichment reading programme is developed and implemented. The final task is to evaluate and analyse the outcomes of the implementation of alternative reading programme called the Striving for Total Achievement and Responsibility (STAR) and to report the research project.

A random sample of 65 students from Secondary two, three and four were selected to participate in the STAR project. The project became the platform for students to hone their reading interests, and acquire and develop multi-literacy skills.

Based on the qualitative and quantitative analysis of data, it was found that while participating students began to read more, maintaining the momentum to read remained a real challenge to the teacher librarian. The data gathered showed that there was modest gain in the areas of cognitive, social and technical knowledge among the participants.

The research highlights the fact that it is critical for a teacher designing a reading programme to share his or her goals with the participants at the onset; to provide participants with critical support to facilitate the construction of their own learning processes and to relate their learning journey to the demands of the workplace so that they could find relevance and meaning in what they learn and study in school. Although limited in scope and focus, the larger underlying concern of this study is to propel further research on the relationships between reading interests and academic performance among students of different levels, ethnic groups, gender and academic abilities.

Key search words: Reading, adolescents, teacher librarian, action research.

Word count: Approximately 69,000 (excluding, Bibliography and Appendices)

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OVERVIEW OF THE STUDY

The dissertation is based on a study conducted at Ping Yi Secondary School (PYSS) using a school-based Action Research. The study was conducted with two primary objectives. Firstly, to develop and promote a reading enrichment programme for secondary students. The second aim was to assess the impact of the learning journey on the students and myself as a reflective teacher.

PYSS is an IT centre for the EastOne Cluster with a huge amount of hardware and software resources. However, students did not optimise these resources. Also, if one were to study a student profile in a typical neighbourhood school, certain characteristics might be observed. The students were relatively weak in their academic subjects as reflected in their Primary School Leaving Examination (PSLE) score. They were especially weak in core subjects like English Language, Science and Mathematics; and tended to manifest low self-esteem and lack self-motivation. There was evidence—from counselling sessions with students—that they lacked discipline and focus, were easily distracted and displayed a self-defeating attitude.

To address the multi-faceted problems, the researcher saw the need to make the library the learning hub of the school, capitalising on technology and promoting reading beyond the conventional norms, and motivating the academically challenged students. At the same time, the researcher believes that students ought to embrace the millennium literacies to survive in the new economy. The Net era necessitates that these students be computer literate and tech-savvy to extract information that is available with the touch of a button. Students must learn, develop and apply the techniques of information gathering skills in their everyday lives.

Against this backdrop, a purposeful and systematic reading programme was designed and implemented. It is a technology-based multimedia interdisciplinary Action Research programme known as the Striving for Total Achievement and Responsibility (STAR) project that weaves and integrates six areas of discipline—Information and Communication Technology (ICT), National Education (Political Literacy), Life skills and Pastoral Care (Self Literacy), Thinking and Creativity (Critical Literacy) and Civics and Moral Education (Moral literacy) and Functional Literacy (basic English Language skills)—into a carefully crafted structured curriculum.

The aim of the reading enrichment programme organised in conjunction with the Library Unit of the school was to provide students with the opportunity for meaningful and optimum learning.

To better understand the study, the dissertation is organised as follows:-

Chapter One outlines the background and rationale of the study. It briefly looks at the transformation of the educational landscape of the world and how the government and schools in Singapore reacted and responded to the rapid changes in education. This chapter also discusses the conceptual and theoretical framework, the significance and the limitations of the research.

Chapter Two provides a relevant and pertinent literature review covering six strands of research areas that are related to the study. The chapter presents a brief review on various issues related to Reading; the changing role of the school Media Resource Library (MRL) and the teacher-librarian; the changing concept of literacy with the emergence of technology; the theory of Constructivism that reflects the unique characteristics of the Net Generation learners; the process and developments

of school-based action research; and the concept-based of Integrated Curriculum model.

Chapter Three details the research methodology adopted by the study. It presents the design and the implementation of the STAR project. With the central theme of *POWER*—a universally recognised theme that stimulates interests in reading among teenagers and leveraging the technology to appeal to this MTV generation—a specially crafted interdisciplinary curriculum model that weaved and integrated six areas of discipline was developed. This chapter also provides a detailed account of data collection procedures and the preliminary findings of the pilot tests.

Chapter Four details the implementation of the actual study through the STAR camp in 2002. It describes the formation of the Learning Circles and various projects carried out by PYSS students. The detailed findings of the processes and the products of both students' and teacher's learning outcomes are documented in this chapter. These include the collection of data from various instruments such as interviews, pre and post-tests, learning logs and reflective journals from participants of the STAR programme.

Chapter Five is the concluding chapter. This chapter looks at the challenges and implications of the study to provide an effective and viable alternative reading enrichment programme in schools. Some recommendations are proposed for future deliberations.

CHAPTER ONE

INTRODUCTION AND RESEARCH PROBLEM

This chapter is sub-divided into five main sections. The first section presents the background of the research. The second outlines the specific aims and context of the study. The third introduces the conceptual and theoretical framework that underpins the study. The fourth section lists the guiding research questions. In the final section, the researcher discusses the rationale, significance and limitations of the study.

1.1 Introduction

1.1.1 The Transformation of the Educational Landscape of the World

Globalisation and unprecedented developments in technology have transformed the educational landscape of the world. Educational institutions around the world are undergoing major changes to meet the challenges of the new millennium. They are gearing up their efforts to prepare their students to meet the demands of the knowledge-based economy[1] (Cutlip, 1988; Moursand, 1999). Constant re-evaluation and re-engineering of the current educational systems are the norms to produce workers who are expected to have relevant qualities to perform complex duties in the knowledge-based economy (KBE).

[1]The term knowledge-based economy or KBE was coined by the Organisation for Economic Co-operation and Development (OECD) in 1996. KBE is defined as an economy, which is directly based on the production, distribution and use of knowledge and information. In 2000, the Asia-Pacific Economic Co-operation (APEC) Economic Committee extended the notion of KBE to include the production, distribution and use of knowledge—technical, cultural, social and managerial. KBE is the main driver of growth, wealth creation and employment across all industries. Knowledge in this context refers to technical competence primarily related to information processing and high tech communications. In the KBE, the ability to create and exploit knowledge is critical to the success of all high tech and traditional industries. The capacity to translate ideas into useful products and processes is increasingly becoming a major source of firms' competitive advantage. Firms that cannot acquire and effectively use knowledge are in danger of losing market share to their more innovative rivals. For economies that are in the process of industrialising, development of a KBE would seem to offer the possibility of vaulting them into the ranks of the developed world. Nonetheless, tremendous investments in human and physical capital are needed.

Workers are required not only to be positive individuals, team players, creative, information technology (IT) savvy, problem solvers and independent thinkers, but also to be life long learners. Thus, educational institutions must fuel the engine and generate info-literate students and workers to enhance the intellectual capital of the individual as well as the nation. Intellectual capital, besides social capital, is one of the economic drivers that will bring about greater intensification of competition among the well-educated.

1.1.2 The Singapore Response

The Singapore government regards the population of four million as its only natural resource. As such, education is the top priority in harnessing the intellectual and developmental capacity of the total population.[2] The goal of the education system is therefore, to develop the talents of every individual so that each could contribute to the economy and to the ongoing struggle of making Singapore productive and competitive in the international marketplace.

Since independence in 1965, for survival and practical reasons, the education system places emphasis on the policy of bilingualism and technical education so that Singapore could survive as an island state. As early as in the 1980's, the Singapore Government has produced several blueprints to exploit technology for development. The three major documents are the Civil Service Computerisation Programme, 1981; the National Information Technology (IT) Plan, 1986; and A Vision of an Intelligent Island: IT2000 Report, 1992 (cited in Wai, 2001). This pragmatic approach has also been the driving force behind the emphasis in Information Communication Technology (ICT) and initiatives taken by Ministry

[2]The top priority given to education is evident from a number of curriculum report published. Improving Primary School Education Report (MOE, 1991b) and Desired Outcome of Education (MOE, 1998a) are some of the published reports.

of Education (MOE). To prepare the younger generation in a world of unprecedented pace and intensity of change, the Singapore government continuously launches many radical policy changes and initiatives within the education system. In tandem with the national vision, Singapore schools have been implementing many of these top down changes to meet the challenges of global economic, political and social changes.

Three major MOE initiatives needed to be highlighted because these have direct bearing on this research and the researcher as a Teacher Researcher. The first is the introduction of National Education to cultivate the sense of national cohesion and the instinct for survival and confidence in the future. The second is the systematic introduction of ICT in education as represented in the IT Masterplan I (1997) and IT Masterplan II (2002) aimed at creating an information technology-based learning environment in every school.

The primary objective of these IT master plans is to equip students (human capital) with IT knowledge and skills that are deemed necessary for success in a competitive global economy. The third is the concept of thinking schools which emphasises the introduction of creativity and thinking skills in teaching. The concept is embodied in the launching of the Thinking School Learning Nation (TSLN) in 1997 and the reduction of thirty per cent in school syllabus to infuse thinking skills in the curriculum. The then Prime Minister of Singapore, Mr Goh Chok Tong, pointed out that the TSLN "is not a slogan for MOE but a formula to enable Singapore to compete and stay ahead" (Gopinathan, 2001:11).

1.1.3 Re-visioning in Singapore Schools

The changes at the global and national levels consequently brought about a wave of changes at the school level. Everyone in the school community—teaching and non-teaching staff, students and parents—is affected by all these constant changes. Chin (2001) noted that change is a constant companion of the Singaporean teachers. In order to stay relevant in the KBE era, schools are constantly drawn into the re-visioning process with the aim of reinventing the ways to teach and learn in the 21st century.

In most schools, the continuous process of adopting, adapting and aligning their vision to the ICT revolution is very visible especially in schools that seek improvements, renewal, efficiency and effectiveness. Schools are consciously making continuous improvements through Work Improvement Teams (WITs)[3] and Learning Circles (LCs)[4] in practically all aspects of school life. Educators are reminded of their role as organisational environmentalists where they have to adapt the organisation to the needs of the environment and adapt the environment to the needs of the organisation.

1.1.4 Responding to Challenges: A Shift in Pedagogies, Curriculum, and Mindsets

In view of the amount of investment by the MOE in technology, there is a critical need for teachers and the whole school community to leverage on the provision of technology and to optimise teaching and learning by developing cyber pedagogies that require radical re-conceptualisation of the processes within

[3]It is a tool for teachers and civil servants to make improvements within the system. See Appendix 1 for the explanation of the concept.

[4]This is also an example of a working tool that can be used to make improvements within the system.

a critical framework. What matter most are not just the physical infrastructures but the appropriate use of technologies to bring about progressive changes in educational practices (Burbules & Callister, 2000). In this context, the concept of effective pedagogy is not only confined to the usage of technology but the critical use of it that goes beyond mere mastery of operational skills (Lanksheer, Snyder & Green, 2000; Koh, 2000). Deng, Zhongyi and Gopinathan (1999) have identified three areas that constitute a new paradigm that the teachers must embrace – new instructional technology, new teaching practice and new teaching beliefs which are fundamentally incompatible with the existing one.

These major shifts in education and changes in educational deliverance are the driving force behind the need for teachers to respond, adopt, adapt and adjust to meet the demands and challenges of teaching the Music-Television (MTV) and Net-generation. Teachers are tasked to lead students to navigate into uncharted territories. In this context, teachers have to take on the mantle of risk takers and boundary breakers. They have to plough the IT corridors for their students. Not only do they have to teach, but they also have to ensure genuine learning takes place.

However, the task can be daunting to the older generation teachers. According to the former Education Minister Teo Chee Hean, in 1996 half of the teachers were over 43 years of age and by 2005 half of the teachers were under the age of 33. The younger teachers, who are the product of the Net generation, are more IT savvy and seem to possess the energy needed to teach and multi task. They are more willing to introduce new ideas in and innovative ways of teaching. The older generation teachers are seen as having a harder time coping with the rapid changes that are taking place within the education system and global economy.

The disparity could have significant implications in terms of new teaching practices, beliefs and technological implementation in schools

Nonetheless, the researcher believes that teachers should be in positions to pre-empt the possible changes within the domain of teaching and learning and apply these changes to their advantage. But some pertinent questions needed to be addressed: Are teachers, who were trained in the traditional pedagogy of the 20th century, equipped and prepared to lead and pave the way for students to explore the 21st century? What are these new skills and competencies, knowledge and values that teachers have to acquire before they could effectively engage the students of the Net generation and teach them these skills and competencies?

1.1.5 Teachers' Predicament

With these multiple initiatives, teachers are constantly required to master a plethora of new skills and contents that are then needed to be communicated to their students. Consequently, many teachers struggle to meet the varied demands of day-to-day teaching and ensuring that students achieve good grades at the end of the academic year. Based on the emphasis of holistic, ability driven and outcome-based education (MOE Planning Document Work Plans for 2001-2002), it has become a norm for teachers not only to teach subjects and conduct co-curricular activities (CCAs) assigned to them, but also to be involved in various school committees and events.

These extra load and constant juggling acts are common within the teaching profession.[5] The researcher observes that when teachers have to shoulder various responsibilities, they would unconsciously ended up going through their day to day job mechanically; becoming so engrossed in the daily routine and operational matters that certain professional aspects of teaching such as self-reflection and professional development were sometimes neglected. They are too overwhelmed with non-teaching activities. Thus, teachers have to pause and step out of the daily routine. They are then able to reflect on their teaching techniques and re-enter the classroom with a better perspective and objective of not only to improve the teaching, but more importantly the learning of students. The education administrators have to recognise that teachers need the space and time to think and reflect so that they could also be agents of change.

The two main ingredients of successful innovation are proactive behaviour and inventive mindset. Most of the teaching professionals in Singapore schools have used various quality management tools such as WITs to brainstorm new approaches to teaching and learning. Some have adopted Action Research, Action Learning or reflective and critical inquiry tools such as Learning Circles (LCs), to further improve their professional practices. But sometimes, their involvements in the various management tools were merely to satisfy the demands of the school management.

According to Lee (2000), though a concerted effort was made as early as in the 1990s by Educational Research Association of Singapore to promote Action

[5]In an open letter to the Editor of Streats (a local newspaper) dated December 2002, a school teacher had expressed feelings of being overwhelmed by the demands of the numerous initiatives implemented by the Ministry of Education (MOE), having to straddle between the old and new system, the lack of time to plan lesson effectively and the constant changes in educational policies.

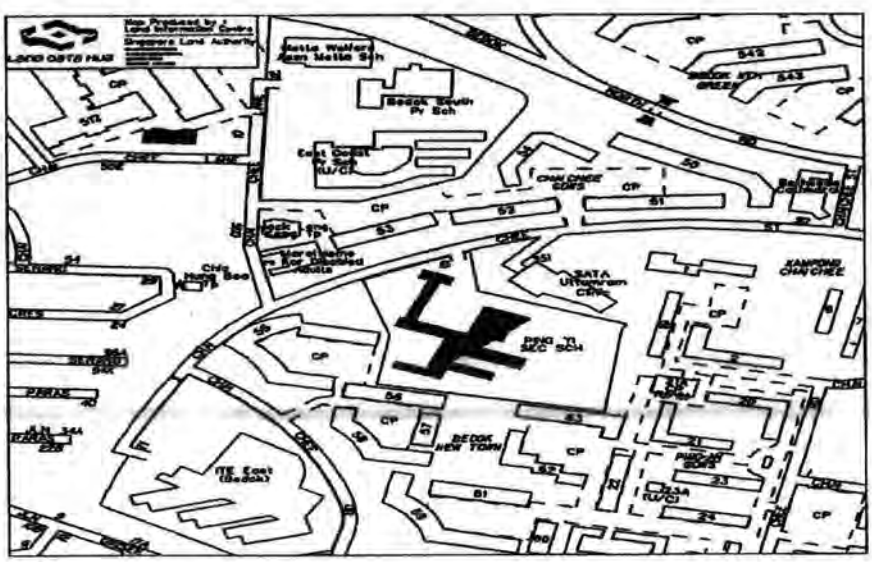
Research, there has been very little progress in getting local teachers to be reflective practitioners. However with the setting up of Teacher's Network in 1997, more effort is channelled to get teachers to be critical and reflective in their teaching and students' learning journey.

1.1.6 The Researcher's Learning Journey

In an attempt to stimulate students' reading interests and improve their literacy competence in the changing educational landscape, the researcher had adopted all the available tools mentioned above. She had engaged the WITs to look into the issue of low borrowing of books and other non-print materials in school MRL by students; employed the Action Research method to examine ways to promote reading interest and multi-literacy among selected groups of students that have been assigned to her; and utilised a modified version of LCs to generate students' interest and exposed them to the concept of reflective thinking. This study documents the researcher's learning journey and critical inquiry into implementing a reading programme in Ping Yi Secondary School (PYSS) through a school-based Collaborative Action Research (CAR).

1.2 Research Context

1.2.1 Ping Yi Secondary School (PYSS)



Map 1: The location of Ping Yi Secondary

PYSS is a neighbourhood school located at the eastern part of Singapore, within the Chai Chee and Bedok neighbourhood (see Map 1). It is a government school with a population of about 1100 students and 73 teachers. As in most government or public schools, the students in PYSS comprise of students from the country's three main ethnic groups; namely Chinese, Malay and Indians. The students are posted to the school based on their academic performance in the Primary School Leaving Examination (PSLE).[6]

Students in the Express stream[7] have a PSLE aggregate score with a range of 188 to 237 (out of 300); whilst students in the normal (academic) stream have an aggregate range of 152 to 192. The average PSLE score for the Express stream for the past five years was between 197 and 200. Statistically, most of the students in PYSS are those that come from the lower rung of the PSLE sores.

1.2.2 Ping Yi as an IT Cluster Centre

Being a neighbourhood school that aims at enriching the life of its students, PYSS became the IT Centre for the EastOne cluster[8] and has a relatively large amount of hardware and software. These resources are to be shared with other

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[6]At the end of a six-year primary education, students take the PSLE. All students select six secondary schools they would like to attend and list them in order of preference. A student is posted to a school based on his or her academic performance in the PSLE and choices made during the posting exercise. The posting of students is computerised. All students will be ranked by merit according to the PSLE aggregate scores. The system will consider the choice of schools of the student with the highest ranking first. He or she will be posted according to the six choices he or she has made–going from the first to the sixth choice. If the student meets the cut-off point for the first school, he or she will be given his first choice. The next student on the list will then be allocated a place. Admission is also subject to availability of vacancies in the school.

[7]Special course and Express students undergo four years of secondary education. Special course students study a second (usually mother-tongue) language at a higher level. These students will sit for the Singapore-Cambridge General Certificate of Education (GCE 'O') Level examination at the end of the fourth academic year. Normal (Academic) and Normal (Technical) students will sit for the 'N' Level examination at the end of the fourth year. Successful candidates will undergo another year of secondary education before sitting for the GCE 'O' Level examination.

[8]From 1999 to 2000, PYSS was in the East1 cluster. From 2001 onwards, PYSS is placed in the East2 cluster. About six or seven schools are grouped into a cluster for the purpose of sharing teaching techniques and exchanging educational information and expertise.

schools within the cluster. Although the school is known to house one of the best library facilities in the eastern part of Singapore, it was not fully and optimally utilised by the students. Through preliminary interviews conducted with the Head of Department of Information Technology (HOD IT), students and teachers in the school, the former had proposed that WITs be deployed to improve the rate of borrowings for both print and non-print materials available in the library. The researcher was appointed as the team leader of the WITs.

1.2.3 Staff Deployment in Ping Yi's MRL

In terms of logistics, the school has four computer laboratories, one Smart Learning Centre and a Resource Learning Centre for students within the Library. The school has two Technical Assistants helping in the IT section – one to man the Audio Visual Aid (AVA) and one library technician to man the MRL. There are altogether six teachers assigned to the MRL – one teacher is in charge of the Reading programme in the English Language (EL), three teachers conduct the Reading Programme in Chinese, Malay and Tamil languages respectively, one teacher assists students in the Computer Club and the sixth teacher helps the librarian to oversee the implementation of MERLIN system.[9]

1.3 Statement of the Problem

In 1999, the researcher was posted to PYSS, and was assigned to be the teacher-in-charge of the school library with the specific duty of promoting reading amongst the upper secondary students[10] as part of her Co-Curricular

[9]MERLIN is an online system used by all Singapore schools for the lending and borrowing of library books within the schools.

[10]These students aged between 15 and 18 years are in Secondary Two to Five. The Secondary Four (Express) and Secondary Five (Normal/Technical) students are in the graduating class.

Activity (CCA)[11]. Not only was she assigned a new task in which she had no informal or formal training, she was also assigned other tasks in four major departments in the school: the Library and IT department as teacher-librarian; the EL department as EL teacher and level coordinator for the Secondary four; the Department of Pupil Welfare as a Teacher Counsellor; and a teacher in the Humanities department teaching History and Social Studies. In addition, she was also the form teacher of a graduating class and the coordinator of the school's Civics and the Moral Education (CME).

It was discovered that the school was quite dependent on external agencies that provide various enrichment programmes. The students' Edusave Fund[12] can be used to pay for various programmes, ranging from literacy to instructional subject-based and life skills or IT. However, not every pupil could use the Edusave Fund to pay for all the courses. At that time, only the first three natural-born children in the family were entitled to or qualified for the Edusave scheme. Subsequent children or non-Singaporeans were not entitled to the fund until 2004. As a result, there were students who had neither Edusave Fund nor cash to pay for enrichment programmes.[13]

To circumvent the reliance on external service providers, teachers may design highly customised instruction or programme that could meet the needs of the learners. The experience would benefit both teachers and their students.

[11]Teachers are to do at least one compulsory CCA, clocking a minimum of two hours per week

[12]Edusave Fund is a government funding scheme given to the first three Singapore-born school-going children to fund part of the enrichment programmes initiated by respective schools. From 2004 onwards, the Edusave scheme is extended to all Singapore-born children as long as they study in the government, government-aided, independent or autonomous schools.

[13]In most cases, the School Advisory Committee paid for the courses on behalf of needy kids.

Furthermore, external service providers that conduct IT or life skills programmes may not fully understand the particular needs of individual school. Too often, programmes provided by the external service providers are piecemeal in nature.

The idea of a holistic approach to innovation in teaching and learning is in line with the concept of school as a learning organisation (Senge, 1990; 2000) where teachers are seen as leaders that promote life-long learning culture. Hence, the researcher took the initiative and risks to embark on a journey to initiate and promote a multi-literacy reading enrichment programme to cater to the different needs and abilities of PYSS students.

To address the multi-faceted problems of students who were non-readers, had low motivation in academic subjects and consequently poor academic performance, the researcher tried to align students' needs and the need to fulfil her multiple roles. As a teacher-librarian, she saw the need to make the library the learning hub of the school, promote reading beyond the conventional means, improve various dimensions of literacy and at the same time, motivate the academically-challenged students. As a PCCG teacher trained in Counselling and Career Guidance, the researcher believes that students ought to embrace the millennium literacy and workplace competencies to survive and thrive in the new economy.

1.4 Rationale of the Study

The brief explanation on the changing educational landscape at the macro and micro level mentioned above set the tone for this study. This study was undertaken because of the researcher's personal and professional interests. At a

personal level, being a teacher-researcher, [14] she strongly believes that developing and nurturing students must go beyond basic literacy of 3R—reading, writing and arithmetic. In the KBE era, students should embrace the millennium literacy which includes another 'R'—reasoning and critical skills, including ICT and other competencies like problem solving, interpersonal and presentation skills.

The researcher explored the various dimensions of educational processes to enhance the existing learning journey both for herself and her students. At the professional level, as a new staff in a typical neighbourhood school and embracing the role of interpreter and enactor of curricular change (Snyder, Bolin and Zumwalt, 1992; Deng et al, 1999), the researcher tried to optimise all available resources (material, human, technological) to improve the existing reading programme organised by the library and simultaneously aimed to provide a value-added service for the benefit of the students and the school.

This case study looked into the current enrichment reading programme conducted by the library unit for the lower and upper secondary students. The aim was to identify factors that could help stimulate reading interest and motivation among this group of teenagers. Technology was harnessed to improve their reading and learning experiences, and in turn the researcher's own teaching practice. Discussions and negotiations with the students were held to find out

[14]The researcher had conducted one quantitative study on the correlates of the academic achievement for the Malay minority students in Singapore and four school-based Action research. The first was on the Environmental Education project called LEEP for Loyang Secondary; the second was the Empowerment programme for youth at risk called the Loyang Therapy Club (LTC); the third was the STAR project and fourth was Project BERJAYA–a parent support group to empower the Malay parents and students—with the help of all Malay Muslim staff of PYSS. One of research projects won first prize in the national Educational Research Association (ERA) competition in 1993. This small victory boosted her confidence to initiate programmes aimed at improving teaching and learning practices in school

what they like to read and how the reading programme was to be carried out in terms of the manner, the venue and the time.

The outcome of that discussions and negotiations led to the development of a highly customised, multi-literacy, multi-discipline and multi-media reading programme called the Striving for Total Achievement and Responsibility (STAR). Using the Concept-Based Integrated Curriculum model, an alternative reading programme was jointly developed after undergoing some consensus building process with the students, HOD of IT, PCCG and members of the School Management Committee (SMC).

Action Research was used as a tool to study and document the processes of the current reading practices and the alternative reading programme. Students were jointly responsible in the process not only as participants, but as partners in this study. This is part of the general aim of encouraging students to broaden their worldview and to experience the learning process of becoming productive students, future member of the workforce and citizens of tomorrow.

1.5 Aims of the Study

This study was conducted with the primary aim of looking into ways of improving the current practice of promoting reading enrichment programme in the English Language among the lower and upper secondary students in PYSS and identifying factors that could help stimulate reading and other literacy activities. It was an exploratory study to examine the use of technology and cyber pedagogy in assisting teacher-librarians in carrying out their duty effectively.

The secondary aim of the study was to assess the impact of the multi-literacy intervention programme termed as the STAR on the learning outcome of participating students. Various aspects of students' experiences and learning journeys were recorded. The data collected provided the school with feedback on the programme or policies that facilitated or inhibited students' reading interest. The alternative reading enrichment programme conducted by the school's MRL unit was to complement the school's effort in promoting extensive reading to improve students' literacy.

1.6 Theoretical Framework

The main theoretical framework that underpins this study is taken from four major areas of educational theories: the theory of motivating students in reading; multi-literacy and technology integration; Vygostsky's theory of constructivism; and educational reforms in the school focussing on Action Research. These four areas will be discussed in greater details in Chapter Two. A brief summary of their influences on this study is presented below.

1.6.1 Reading Motivation and Engagement

According to Guthrie (2000), there is a very strong relationship between motivated reader and engaged reader. Engaged readers are those who are intrinsically motivated to read for knowledge and enjoyment. Engagement is strongly related to reading achievement. It has the effect of compensating low achievement students from low family income and educational background. A study of a national sample of students from three age groups (nine, 13, and 17 years of age) in the United States shows that the more highly engaged readers from low income/educational families showed higher achievement than the less engaged readers even when the latter came from high income/educational

background (Campbell, Voelkl, & Donahue, 1997, online document cited in Guthrie).

These findings are similar to a study conducted by Krashen (1993). Being the staunchest supporter of independent reading, Krashen maintains that the single factor—more than socio-economic status or any instructional approach—that is strongly associated with reading achievement is independent reading, which reflects strong motivation among readers.

Guthrie identifies nine contexts that encourage a child to become a motivated and engaged reader. They are: the real world instruction, autonomy support, interesting texts, strategy instruction, collaborations, teacher involvement, rewards and praise, evaluation and coherence. These contexts will be discussed in detail in Chapter Two.

1.6.2 Multi-literacy Framework

The second strand of theory that underpins this study is a modified version of the multi-literacy framework developed by The New London Group (1996). This framework is primarily concerned with developing a pedagogy that integrates the written with the visual and other modes of symbolic representations. However, the concept of multi-literacy in this study is not confined to the use of print and non-print resources but includes the different dimension of literacy of multiple disciplines that are interwoven into the Concept-based Integrated Curriculum Approach.

Participating students of the alternative reading programme conducted between 1999 and 2002 were exposed to conventional and online reading, taught to make

critical evaluation of CD-ROMs, web sites and hypertext construction and assigned to do a multi-media project work. As such, students would be equipped with a new literacy that extends beyond reading and writing by incorporating new blended forms of hybrid textualities (Koh, 2000). Eventually, both students and teachers could harness technology to enhance learning and teaching outcome respectively. Students were given opportunities to assume responsibilities and take charge of their own learning journeys. The critical need to equip students with the multiple dimensions of skills and literacy is the major force that underlines the design and planning of the STAR reading project. Hopefully, those skills would also help in enhancing the self-esteem and improving the academic achievements of the participants through the project content which focussed on self literacy.

1.6.3 Theory of Constructivism

The theory of constructivism which incorporates cognitive growth and learning is the third strand adopted in the study. Constructivism teaching is based on the belief that students learn best when they gain knowledge through exploration and active learning. The constructivist contends that students actively construct their own knowledge and build their own schema. Rather than simply absorbing ideas spoken to them by teachers or internalising them through endless and repeated rote practice, constructivist posits that children actually invent their own ideas.

Constructivist educational applications lay in creating curricula that match (but also challenge) children's understanding, fostering further growth and development of the mind. In such an environment, teachers have to be flexible because their role is to engage the children by helping them to organise and take initiatives in their own self-directed explorations. Teachers fulfil the role of a

guide or a facilitator rather than a sage. Constructivism emphasises the careful study of the processes by which students create and develop their ideas, where both the teacher and students are co-investigating in searching for meaning on the way the world works (Brooks and Brooks, 1993).

Dewey (1933) identifies two types of teachers: those engaged in routine and those engaged in reflection. The former demonstrates a habitual behaviour and tends to react to situations and is likely to be traditional and authoritarian. The latter is selective and engaged in persistent, active and careful consideration of any belief or supposed form of knowledge. Underlying this action of reflection is the notion of constructivism where reflections on personal experiences become a learning opportunity (Lee, 2000).

The theory of constructivism explains the rationale of cooperative planning between the researcher and the students at the onset of this study. Cooperative planning entails negotiations, discussions and collaborations in the choice of resources and the ways and methods in which the project was organised and implemented. Hopefully, through this study, participating students would develop a strong sense of ownership, commitment, responsibility and leadership as they were collaborators and partners in the study, especially in the area of technology application of the reading programme where students' knowledge was relatively far superior to the researcher.

1.6.4 Action Research

Action Research (AR) is defined as an investigation of a problem. As a result of self-appraisal of the current practices within the school, the researcher focused on a problem (or a topic or an issue which needed to be explained), planned,

implemented, evaluated an action and derived some conclusions on the basis of the findings (Macintyre, 2000:1). The research design includes the experimentation with new forms of assessments—using portfolios to evaluate students' learning outcome during the research processes and the end product.

With the continued waves of changes in the educational landscape, teachers are in the enviable positions of building the capacity of the students and maximising their potential to the fullest. It is very important therefore, for school to function as Leaning Organisations that nurture the culture of continuous learning among teachers and the rest of the school community. Such an agenda justifies the case for the introduction of AR into school with the aim of improving teaching and learning in the school.

By using AR, the researcher intends to look at her own teaching practices — identifies the strength and weaknesses, challenges and potentials, problems and opportunities to improve not only her teaching practice but also, students' learning process and journey. This study capitalises on other bodies of knowledge to develop a holistic understanding of new phenomenon like the impact of online reading among adolescents and the new concept of literacy that integrates technology to enhance teaching and learning in a neighbourhood school.

1.7 Conceptual Framework of the STAR Project

The conceptual framework for the STAR project could be graphically illustrated by using concentric circles[15] as shown in Figure 1 below. The content, pedagogy, different aspects of literacy are weaved together using the Integrated

[15]This model is adapted from Smart School Conceptual Blueprint, 1997.

Curriculum model which the researcher has systematically designed and developed.

At the core of the framework is the basic or functional literacy to improve proficiency in the English language. It incorporates the main aspect of reading, writing, listening and speaking. The second layer of the concentric circle represents the content of the STAR Project. The four components identified in this circle are life skills (part of the Pastoral Care and Career Guidance or PCCG programme), moral education, self-literacy and National Education.

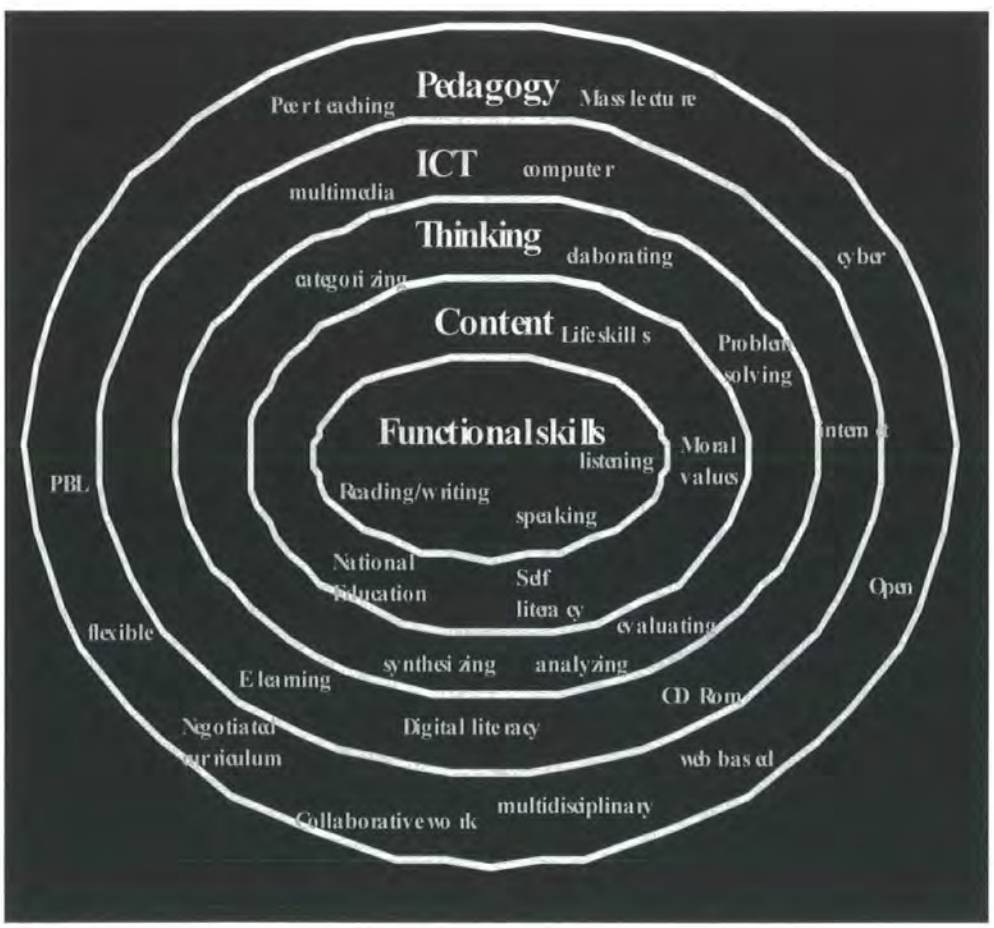

Figure 1: Conceptual Framework for the STAR Project

The main concept used for reading across discipline is POWER. The concept elicits interests (Hidi, 2001) and as such, students would be motivated to read on different genres. The researcher and selected students from the upper secondary

level evaluated and chose a series of motivational CD-ROMs. The selected CD-Rom entitled 'Developing Winning Attitude and Personality' was used as the core content for the STAR project. At this juncture, students read relevant print or screen-based materials on the chosen theme and completed assignments and tasks assigned.

The critical literacy which constitutes skills like inferring, comparing and contrasting, categorising, analysing, evaluating and problem solving is reflected in the third layer of the concentric circle. Students have to go through those processes by completing the various tasks in the STAR project package which includes workbook, group projects, web designing, creating online newsletter, case studies and follow-up activities like Job Shadowing, Entrepreneurship or Service Learning.

The fourth layer is the Information Communication Technology (ICT) in which technology is used as learning tools to learn the multi-dimensional aspect of literacy. Students are to learn the hardware tools (such as how to install programme, using different types of printers, scanner and troubleshooting) and software components (word processing, excel, power point, Macromedia, Microsoft publisher, Kick-start, Microsoft access, etc). The acquisition of computer-technology knowledge is done informally through the notion of 'just-in-time' (JIT) skills. Students learn from observing their peers who are familiar with the tools or have acquired the JIT skills through trials-and-errors.

The nature, characteristics and implementation of the STAR project are rather unique as it reflects the application of the principle of hybridism in the area of pedagogy, textualities and content, so that multiple aims of the intervention

reading programme could be achieved. This is reflected in the last layer of the circle. In the acquisition of functional skills, multiple pedagogies are embraced at certain times for certain activities with certain group of students doing and acquiring selected tasks.

1.8 Research Questions

This study explores the factors that could stimulate students' interest and motivate them to become independent readers. The following are the main questions that the researcher attempts to answer through the implementation of the school-based Collaborative Action Research reading project:

a. Is the current reading enrichment programme under the MRL effective in achieving its aim of stimulating reading interest among students?

b. How could the researcher develop an alternative reading enrichment programme for the non-readers or reluctant readers among the adolescents?

c. What are the factors that can stimulate reading among students who are non-readers or reluctant reader? Will a multi-media multi-literacy reading programme stimulate interest in reading among them?

d. How could the teaching of the multiple dimension of literacy which is reflected in the multiple aims of the school curricular be done without overloading students and teachers while at the same time optimising the learning experiences of the students?

e. What will be the key performance indicators used to measure the effectiveness of the programme? Can the criteria of engagement, connections, interaction and responsiveness be used to measure students' quality learning?

f. Will it be possible for the researcher to share her experiences to help fellow practitioners to conduct school-based Collaborative Action Research? Based on the implementation of this bottom-up initiative, what are the learning points that helped or impeded innovations and reforms in a school?

1.9 The Conceptual Framework to Address the Research Questions

Table 1 represents the framework that attempts to address the research questions. It also shapes the scope of this study. The framework of the STAR project given in Figure 1 is subsumed under the overarching aims of this research.

Table 1: Conceptual Framework of the Study

Multi-Media Strategy to Generate Interest • Online • Print based • DVDs • CD Rom • Digital Video camera • Radio/TV • Web-based (Question c)	**Multi-Literacy Reading** • Technology • Critical • Self-literacy • Functional literacy • Political (National Education) (Questions a and c)	**Multi-Disciplines** • EL/MT • NE • CME • PCCG • Thinking skills • ICT (Questions a and d)

Curriculum Development – Concept-based Integrated Curriculum Model
• Students' Task sheet
• Teacher's Lesson Plan
 	
(Questions b and d)
	Action Research Study and other Evaluation Tools
	• Quantitative Data
	  o Demographic data
	  o Pre test
	  o Post test
	• Qualitative Analysis
	  o Reflective Journal
	  o Learning Log
	  o Interviews
	  o Feedback from critical friends
	  o FGDs
	
	(Questions a, b and f)
		Multi-Pedagogy
		• Student-centred
		• Teacher-centred
		• Mass lecture
		• Collaborative Learning
		• Individual Reflection/Reading
		• Online sharing
		• Evidence-based
		• Problem-based learning
		
		(Question a and f)

Graphically, the conceptual framework of the study and the STAR project is represented in Figure 2. The STAR project is the intervention programme that is designed to address the above research questions

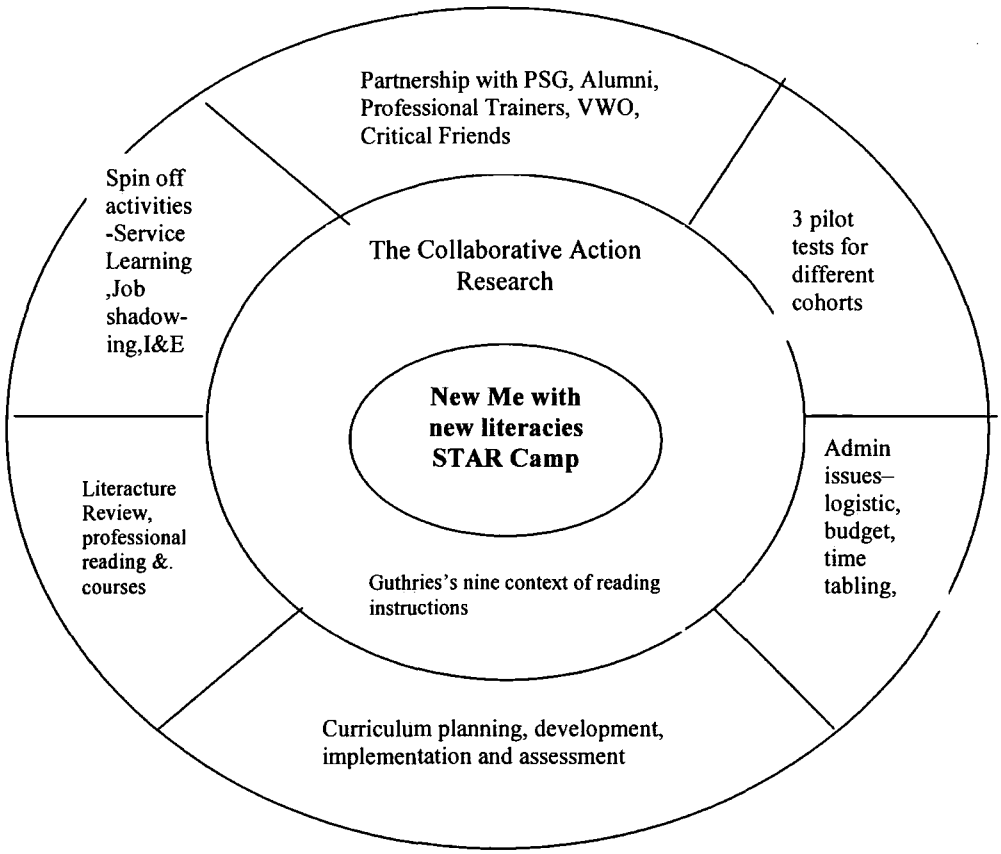

Figure 2: The Graphic Representation of the Relationship between the STAR Project and the School-based Collaborative Action Research of the Study.

1.10 Assumptions of the Study

In this study, the following assumptions are made:

1. Many of the typical upper secondary neighbourhood school students are not keen in independent reading; they are not motivated or engaged readers.

2. Since the students belong to the net generation, the freedom to choose any genre with the same theme and the extensive use of technology

would serve as an impetus to interest them in reading and facilitate the reading process.

3. Students of Secondary two, three, four and five levels have no serious reading problem; they are non-readers or reluctant readers partly because reading is not part of their habits or something that they value.

4. The existing reading system is not effective in engaging the students. This is because they are expected to read print-based materials of certain genres that are written by local authors which are available in the school library only.

5. AR is a suitable tool to approach this study as it provides the opportunity and flexibility to the teacher-researcher to experiment with different teaching methods, instructions, materials and settings to improve her professional practices and improve students' learning journey.

6. The researcher can and must make a difference in the lives of the students, providing value-added service to the students. Thus, the focus is on processes that enhance the students' learning rather than the status quo of the school or the students.

7. The participants will report accurately the background information and their perceptions of their personal values, reading interest and other items that were given in the questionnaires.

8. The participants, trainers and other collaborators such as members of the school alumni and Parents Support Group (PSG) are truthful in their responses, feedback and discussions during the LC sessions, and evaluation written in the learning log and reflective journal.

1.11 Significance of the Study

The significance of the study is three-fold. First, it involves the students and their self-discovery journey towards attaining self-efficacy through reading and developing other aspects of literacy. Second, it is part of PYSS continuing tradition of making the library as the learning hub of the school. Third, it allows the researcher to implement a school-based action research that helps to promote innovation that enhances her role as professional and the students' development.

1.11.1 PYSS Students

The study helps shed some light on the process of discovering contributing factors that could develop and promote students' reading interests, motivation and mindsets from being aliterate (unwilling to read) and non-readers to being multi-literate (able to understand the multiple modes of symbolic representations and skills in multiple disciplines), motivated and engaged readers.

1.11.2 The School

This study hopes to contribute to the body of research that has been conducted on reading motivation. More importantly, the study attempts to address the needs of promoting reading interests among the upper secondary school students in neighbourhood schools. Systematic research needs to be done to examine critically the effectiveness of the implementation of reading programmes in schools that could shed some light on how the schools' library units could fulfil

their role in improving literacy among the students and thus, transforming library units into learning hubs.

1.11.3 Personal and Professional Development

From the researcher's perspective, this study has allowed her to identify strategies; context and settings that help stimulate students' interest and motivation in reading, acquisition of and fluency in multiple areas or dimensions of literacy and integration of different disciplines through the concept-based integrative curriculum framework.

While reviewing the literature on reading motivation and interest among adolescents, the researcher became more aware of the need to create positive setting and context to achieve her aims. She genuinely sees the need to adopt a multi-media approach in teaching to leverage on the interests of students in technical gadgets (computers, internet and digital camera).

Professionally, the study has assisted her in fulfilling her multiple roles effectively; made her aware of the holistic approach in the area of teaching and learning; enhanced her understanding the workings and significance of technology; and equipped her to be a more reflective teacher..

Though she is not a Reading Specialist or a Media Specialist, the researcher has attended many professional courses related to this area of study. She has made an attempt to conduct a systematic study on reading motivation. She also shares her experiences and the research journey with teachers in the school and other practitioners within and outside the cluster schools through national and regional educational conferences and seminars.

1.12 The Issue of Role and Voice of the Researcher

This study started as a simple teacher action research. The researcher had intended to improve her role as teacher librarian. However, as her research interest deepened, she saw the need to adopt a combination of both quantitative and qualitative research methods to obtain the desired findings.

Normally, the quantitative researcher is detached from the study to avoid being bias whereas the qualitative researcher becomes immersed in the situation being studied as he or she assumes the interactive social roles while recording various observations and interviews with different participants in a range of contexts (McMillan & Schumacher, 2006).

Being fully aware of the two contrasting research methods, approaches, purposes and processes, the researcher decided to report the mixed-method design study using the voice of a third person instead of a first person. The researcher chose to address herself in the third person to avoid the tendency to be descriptive in presenting the process and the findings of the study. Though she played the dual role of a teacher and a researcher, presenting the study in the third person helps the researcher to be more aware of her role as an independent participant. With the assistance of critical friends and awareness of being objective, the researcher was able to look at the process of this study beyond her role as a teacher.

1.13 Limitations of the Study

This study is an attempt at employing multi-dimensional school-based collaborative action research to develop and promote multi-literacy reading, and stimulate interests and motivation among the non readers in a neighbourhood secondary school. As such, the study has its limitations.

It is an introductory effort to redefine literacy in the era of technological advancement and changes to assist students in a neighbourhood school to cope with the demands of the knowledge-based world. As the study is conducted in only one neighbourhood secondary school in Singapore, its results may or might not be replicated or applied in a larger and a more diverse school population. This highly customised reading project may or might not even be valid in other schools because of the variations in the settings, students' profiles and experiences among the teachers and students.

In addition, the novelty of the online reading programme, activities and the negotiation process between the teacher and students, might have influenced participants' responses and level of engagement. The participation of the alumni members and PSG, and students' involvement in the national milestone event called the iTopia (IT Opportunity, Innovation and Achievement in Education) were other additional factors that had positively influenced the outcome of the reading programme. Students involved in the project were very eager to showcase their works and artefacts to the public during a two-day School Open House held in July 2002. These factors could have skewed the results of the study.

Since the study focuses on reading interests and motivation, there was no attempt to link this study with students' overall reading abilities or examination grades. Only informal assessment of the reading programme and measurement of the level of students' reading competencies were carried out throughout the implementation of the reading programme. Basically, the reading programme mainly helped in raising students' awareness of the concept of new literacies so

that they could better understand the education process and its significance with the working world.

It had also increased their motivation to read because the reading programme did not limit or confine the reading session to print based materials. Although the concept of authentic assessment through the use of portfolio was explored and introduced, it was not fully utilised or strictly implemented. Grades were given to students based on key performance indicators which included the completion of work and the quality of project work produced. Qualitative assessments are considered as part of the non formal assessment for the Civics and Moral Education in Singapore education system.

1.14 Operational Definitions of Main Variables used in the Study

The terms used in this study are chosen based on the available literature, the suitability of their meanings to the context and the aims of the study. However, some adaptations were made to these constructs because there were instances where it was not possible to use them in their original meanings and contexts. Below is a list of the constructs that were adopted and adapted in this study:

Functional/Basic Literacy (adopted from Education Development Centre, 2001): This construct refers to students' ability to have proficiency in EL (suitable for the standard set by the school) which includes reading, writing, listening and speaking using conventional and technology-based media. Students are expected to have the ability to decipher meaning and express ideas through a range of media

Technological Literacy (adopted from the International Technology in Education, 1998): This construct refers to the ability to use computer tools such as word processors, presentation and graphic software and spreadsheet; and the use of networks and applications which include internet and web-pages.

Critical Literacy: The construct looks at the ability of students to find meaning and aim of the written text, visual applications and spoken words with the intent of questioning the attitude, values and beliefs behind them. The goal is to discern meaning from an array of multi-media, visual imagery, virtual environment and written text.

Self Literacy[16]**:** This construct refers to one's ability in knowing one's self, which includes the learning style, attitudes, values, needs, potential, strengths and weaknesses.

Multi-media: This construct refers to the use of different medium in conducting the action research study on the STAR project.

Multi-literacy: The term used in this study denotes the multi-disciplinary coverage of the project that tries to increase participants' awareness of the different aspects of literacy which are important in the ICT age.

Multi-pedagogy: This constructs refers to the deployment of various instructional approaches in the implementation of the STAR project.

[16]The term was coined by Lui (2001) synthesising the work of Virginia Satir (1970), Nathanniel Branden (1980) and Stephen Covey (1989). It is about the ability to (1) read, understand and know one's needs and potential; (2) articulate one's feelings and ideas and relate to others; and (3) appraise and manage one's thought and behaviour.

CHAPTER TWO

LITERATURE REVIEW

This chapter is divided into seven subheadings – each highlights the different bodies of literature relevant to the multi-dimensional nature of this study. The research draws extensively on literature concerning reading motivation, technology and literacy so that the researcher could derive a systemic view and perspective related to this study.

However, it should be cautioned that this chapter is not presented as a mere regurgitation of the existing literature, but highlights the relationship of the study to previous literature. This step is essential for ensuring that the focus and results of the study are linked meaningfully to the current literature and that the study contributes to the existing body of knowledge.

The first segment discusses the definition and aims of reading in school. It looks at the reading interests among teenagers—the target group of this study, the general reading habits of Singapore students and a brief discussion on reading programmes in Singapore schools.

The second section presents a brief review of the role of the school's Media Resource Library (MRL), and its impact on the literacy programme and students' learning journey. A discussion of the school's MRL unit is included because reading and other literacy activities are jointly organised by the unit. This section also looks at the teacher-librarian's role in managing the MRL.

The third part of this chapter discusses the concept of literacy and its relationship with rapid advances of technology. It provides a brief explanation on the development of technology in Singapore schools with specific reference to its impact on reading, literacy and learning. The relevance of technology is seen in the implementation of the multi-media, multi-literacy STAR programme whereby computers and related software were extensively used in enhancing the process of the construction of learning and the generation of new knowledge and experiences among the teacher-researcher and participants.

A brief discussion on the theory of constructivism that underpins this study is examined in the fourth section, followed by an analysis of the concept of action research and its relevance as a tool in school-based research to bring about changes in teaching and learning practices in schools.

The concept of curriculum planning and development is discussed briefly in the final section of the chapter. This section specifically highlights the theory and practice of Integrated Curriculum model and its relevance to the teaching of multi-media and multi-discipline reading project among PYSS students.

2.1 Issues Related To Reading

Reading is probably one of the most researched themes in education that went as far back as 1879 when a paper was published on eye movement in reading. Over the years, the instruction of reading has been the focus of many debates among educationists because reading is essentially the key to a child's learning. From a learning perspective, reading is closely related to many other cognitive and affective developments such as attention, interest, motivation, concept formation, imagery, language, instruction, memory, perception and even achievement (Gibson and Levin, 1975). This explains why extensive researches on reading have been carried out across levels, covering various aspects and issues, especially on early reading instruction, early childhood, adolescents and adults.

2.1.1 Definition of Reading

The definitions of reading are many but not necessarily exhaustive and have evolved over time (Lonsdale, 1994). In its simplest term, reading means being able to reproduce mentally or vocally written or printed words (Oxford English Dictionary).

Technically, reading is the ability to comprehend the construction of meaning. Readers construct meaning by interacting with the text (Pearson et al., 1990) on the basis of their existing or prior knowledge of the world. The National Council of Teachers of English of USA (NCTE, 2004) defines reading as a complex, purposeful, social and cognitive process in which readers simultaneously use their knowledge of the topic of the text and their knowledge of their culture to construct meaning. Reading is seen not merely as a technical skill to be acquired once and for all but rather a developmental process. A reader's competence

continues to grow through engagement with various types of texts and wide reading for various purposes over a lifetime.

Reeves (2004) sees reading as a complex phenomenon that not only acts as a means of communication, but also a cognitive activity, a social practice and a personal experience. He feels that it is impossible to separate the act of reading from the content and the context of the text being read.

The many definitions of reading reflect the dynamic characteristics and expansion in the meanings, aim and activity of reading. Table 2 highlights the differences between the traditional and new definitions of reading which are mainly drawn from the cognitive sciences. In view of the nature of this study which looks at the motivation and interest factors of reading among students using multi-media, multi-disciplines and multi-literacy of the STAR project, the new definition of reading is used. As such, this chapter excludes discussions on the technical aspect of reading and reading instructions.

Table 2: Old and New Definitions of Reading

	Traditional Views	**New Definition of Reading**
Research Base	Behaviourism	Cognitive sciences
Goals of Reading	Mastery of isolated facts and skills	Constructing meaning and self-regulated learning
Reading as Process	Mechanically decoding words; memorizing by rote	An interaction among the reader, the text, and the context
Learner Role/Metaphor	Passive; vessel receiving knowledge from external sources	Active; strategic reader, good strategy user, cognitive apprentice.

Source: Knuth and Jones (1991) which was reprinted from the *Guide to Curriculum in Planning in Reading*, from the Wisconsin Department of Public Instruction

2.1.2 Aims and Value of Reading

The aims of reading have changed over the years; from a simple mastery of isolated facts and skills to a sophisticated understanding of constructive meaning and self-regulated learning. In general, reading broadens the intellectual horizon of the reader, flexes the mental muscle, improves thinking processes and provides aesthetic experience. Reading serves a myriad of aims, which include education, entertainment, communication and information (Mok, 1994).

Studies have shown that students who read regularly outside of the classroom improve their academic skills (e.g., Krashen, 1993; Gallick, 1999; Goodman, 1996). Through reading, students build on their vocabulary and increase their comprehension; become better at spelling and grammar usage; improve their writing style and general knowledge of the world. Besides improving academic achievements and literacy skills, reading provides a child with new ideas and knowledge. It broadens a child's mindset and enriches its life. A well-read child will most likely grow up to be lifelong reader.

2.1.3 Independent Reading and Reading Achievement

Krashen (1993) cites findings from numerous studies that indicate the amount of leisure, independent or free voluntary reading is correlated with the achievement of a child. For example, the 1992 national study conducted by Mary Foertsch showed that there is a positive relationship between the amount of reading outside of school and reading achievement. According to Anderson, Fielding and Wilson (1988), reading promotes reading—the more one reads, the more one's vocabulary grows and the more words one can read, the more reading one can do. Ivey and Broaddus (2001) echo the same conclusion and add that independent reading time is important for middle school students.

However, it should also be noted that studies conducted by the National Reading Panel from the United States of America have shown that there is no clear evidence to show that encouraging students to read more actually improves reading achievement (National Institute of Child Health and Human Development, USA, 2000).

In the context of Singapore schools there is positive evidence on the impact of reading and achievement score. The Extensive Reading Programme (ERP) was started in 1985 through a special project to assist selected Singapore schools in English skills which involved forty of the weakest secondary schools in the Singapore school system. This special project ran for five years from 1985 to 1990. In that time, it succeeded in raising the schools' EL pass rate at the G.C.E. 'O'[17] level examination above the national average. Extensive reading was a principal performance indicator of the project. It was so successful that many schools outside the project adopted the programme, with the assistance from the Ministry of Education (Davis, 1995).

This study uses many variations and adaptations in the reading literature so that students would be enticed to want to read in the researcher's school. Hopefully, the inculcation of reading habit would help improve the academic progress of the students in the neighbourhood school.

2.1.4 Factors Affecting Reading Interest and Motivation Among Teenagers

What motivate students to read? In a study conducted at the primary school level, Palmer, Codling and Gambrell (1994) have identified four factors that affect a child's motivation to read. They are: (1) prior experience with books — reading

[17]See footnote 7 in Chapter on explanation of the examination.

book already read to him or her, books based on TV or movies, series books; and rereading favourite books; (2) social interactions — reading books recommended by friends, parents and teachers; (3) access – having books easily available, especially in the classroom library and at home; and (4) choice — reading books that are selected independently.

In addition to the above, there are other factors that contribute to motivation and reading interests among teenagers. These factors include peer influence, family background, book ownership, access to libraries with good collections, reading programmes in schools and, subjects or themes that are deemed interesting. Kinstch (1980) refers to these interests as emotional interests. Readers automatically become interested when their emotions are engaged.

Hidi (2001) identifies two distinct ways of investigating the relationship between motivation and reading. One approach focuses on the impact of personal preferences – how individuals' already formed interests affect their performance. The other approach is the text-based approach which examines how the interestingness of stimulus materials influenced subjects' performance. Studies conducted over the last 20 years have demonstrated that both readers' well-established individual interest and their situational interest (elicited by text, segment, topics and theme) contributed to increase reading, comprehension and learning.

In a study on college students, Krapp and Schiefele (1996) conclude that interest does not only enhance the amount of recalled text information but has a strong influence on the quality of learning; interest seems to motivate readers to go beyond the surface structure of the text. Knutson (1998) posits that the ***factor of***

interest and purpose play an equally important influence on the reading. This implies that when readers are asked to read a text with a particular focus or angle, both their reading interest and retention of text material will be heightened

Having recognised the importance of reading in students' learning and achievements, this study focuses on the context that would encourage students to become motivated and engaged readers.

Students' interest and engagement in reading have also been consistently associated with or influenced by various aspects of literacy that include: (a) situational interest or the likelihood that students' interest for text can be triggered; (b) students' attention to important content; (c) students' memory for concrete text; (d) students' perception of text coherence; (e) students' understanding; (f) students' background knowledge (Alexandra, 1997); (g) students' depth of processing; and (h) the design of learning environment (Guthrie and Cox, 1998; Garner et. al., 1989; Wade, 1992; Schiefele and Krapp, 1996, cited in Hidi, 2001).

Guthrie (2000) states that one should aim at developing intrinsic motivation to make a child to become an engaged reader, rather than just looking at reading interest or even attitude. According to him, students' intrinsic motivation declines as they attend middle school. He identifies nine ***Instructional Contexts*** that would foster engagement processes and reading outcomes as illustrated in Figure 3 below. They are: the real world instruction, autonomy support, interesting texts, strategy instruction, collaborations, teacher involvement, rewards and praise, evaluation and coherence.

In the middle of the diagram in Figure 3 are the learning and knowledge goals which are co-developed by the teacher and students. Guthrie quoted the study done by Roeser, Midgley and Urdan (1996) to show that teachers' learning-goal orientation fostered students' self-efficacy. According to him, the model provides a natural context for teaching students to understand conceptually and to support students' autonomy.

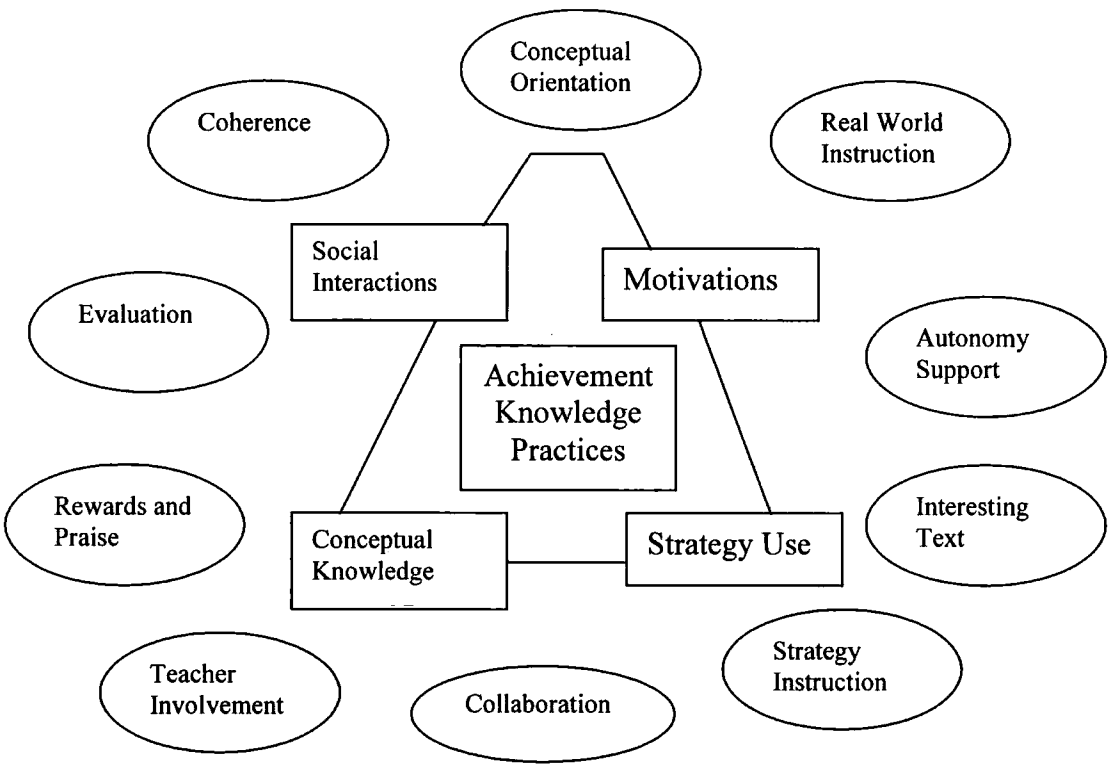

Figure 3: The Engagement Model of Reading Development (Guthrie, J.T, 2000)

The 'real world interaction' refers to learners' sensory and personal experiences that play the role of invoking intrinsic motivated behaviour; 'autonomy support' refers to the teacher's guidance in helping students make choices among meaningful alternatives in texts and tasks to attain the knowledge and learning aims; and 'interesting texts' for instruction are texts that are relevant and yet interesting to the students so that learning aims can be achieved. According to

Wade, Buxton and Kelly (online abstract, 1999) and Csikszentmihalyi (1990, cited in Guthrie, 2000) texts with important, new and valued information are associated with students' interest. However, it is important that texts are matched to learners' cognitive competence.

The 'strategy instruction' involves the explicit teaching of behaviours that enable students to acquire relevant knowledge from text. Explicit instruction includes teacher modelling, scaffolding and coaching; with direct explanation for why strategies are valuable and how and when to use them. 'Collaboration' refers to the social discourse among students in a learning community that enables them to see perspectives and to construct knowledge socially from text. Many teachers use collaboration to activate and maintain students' intrinsic motivation. The use of 'praise and rewards' has to be factored in because it is an effective strategy in encouraging effort and attention among learners.

Classroom instruction that fosters motivation, strategic development, knowledge gains and social growth can be undermined by evaluation that contradicts the instructional aims. Thus, in this context, evaluation activities have to be placed on a continuum from highly objective and standardised (i.e., standardised tests) to highly student-centred and personalised (i.e., portfolios).

Although standardised tests are easy to administer, score and report by administrators, Guthrie (2000) cautioned that they fail to reflect students' ownership, motivation and reading practices. Instead, portfolios could be used for evaluation because they readily support student motivation. However, such forms of assessment are difficulty to administer. Thus, he recommends the use of

a combination of both types to meet the optimal administrative needs of the school and the educational needs of students.

According to the model, 'teacher involvement' refers to the teacher's ability to be involved with students' personal knowledge and interests, care about each student's learning and have realistic and positive aims for students' effort and learning. Skinner and Belmont (1993) observe that when students perceive teachers to be involved (interested in their progress) and are autonomy supportive (provide some control of learning), they are engaged in the classroom — for example, participate in class discussions, learn actively and appear happy.

Nonetheless, the finding shows that teacher involvement does not directly influences outcomes, but has a significant benefit in student engagement which is significant in the path to student outcomes. Skinner and Belmont also add that the influences are reciprocal: student engagement affects teacher involvement as much as teacher involvement influences student engagement.

The final instructional context in the diagram is the issue of coherence of instructional processes. Each of the instructional processes has been discussed in isolation, but there are important connections across them. The word 'coherence' is used to describe these interconnections. When real-world interactions are closely aligned with interesting texts, coherence is increased. These nine instructional contexts are studies that the researcher has taken into considerations when developing the STAR project and conducting this study.

2.1.5 Reading Habits among Singapore Adolescents

It is interesting at this juncture to see the cross-cultural differences in the reading habit among youth in Singapore and that of the United States of America. Yin (1998: 33) states that "while students in Singapore will not hesitate to read school-related materials and to study hard ... getting those to become lifelong readers and to read for pleasure remain an uphill task for schools." Singapore students are very examination-oriented, thus, the motivation and interest behind reading are very different. They are very 'utilitarian' and practical in their approach to reading. However, many teenage students in America prefer to read new best sellers instead of the school's required books (Tanis, 2003).

Zirrinsky and Rau (2001) point out that in general males and females read in varied ways. Reading, which is a quiet indoor activity, is more prevalent among female teenager vis-à-vis male teenager. Reading among teenagers is also genre-specific. Females prefer reading fiction with a central female character they can relate to and written by a female author.

Teenage males, on the other hand, prefer to read non-fiction and comics. Because of the lack of interest in reading fiction, teenage males are more likely to be more non-attentive and bored in language classes. This concurs with observations made by Smith and Wilhelm (2002: 10) that more boys than girls describe themselves as non-readers. Boys prefer to interact in Science and Mathematics classes where their non-fiction reading on the Big Bang Theory will prove to be more interesting, as opposed to Shakespeare's Hamlet in English class. Due to this, parents and teachers tend to classify male readers as non-readers although it may not be necessarily true.

However, there could be some variations in reading habit, interest and culture among different communities within Singapore. For example, the Chinese are more likely to borrow library books while the Malays have the lowest tendency to do so (Seok Lee, 2002). Sangkaeo (1999) observes that some communities are not *reading* but are *chatting societies.* It is the cultural habit of some communities to prefer to listen to information rather than read it up. If one were to analyse critically why certain ethnic groups, especially the Malays, in Singapore are not keen readers, it is possibly because they traditionally belong to one of the 'chatting societies' as mentioned above.

2.1.6 Reading Facilities in Singapore

The Singapore government sees that an effective way to get the entire nation active and interested in reading is to build many public libraries and equip all schools with a school library. The National Library Board (NLB) administers a network of 21 community and regional libraries and 46 Community Children's Libraries throughout the nation. A total of seven million books are housed in the public libraries.

The NLB constantly updates facilities in public libraries to include many different E-services and virtual libraries to cater to public's demand. One of its latest initiatives in building a knowledge-ware in the digital economy is the launching of the *eLibraryHub* in 2001. It is a one-stop integrated library for immediate access to the vast information resources from around the world. Users can access the huge digital resources for a low subscription fee. The Student Virtual Community (SVC) is another service provided by the NLB which caters to primary school teachers and students.

The NLB has also launched many programmes to encourage Singaporeans to read extensively and to promote life-long learning. Those programmes aim to cultivate the reading habits in young children, as well as to sustain the reading interests of young adults. Some of these programmes include the 'National Family Reading' programme which involved 4,000 families, and 'Born to Read, Read to Bond' (a joint effort with the Ministry of Community Development and Sports) which saw a membership drive at nine collaborating hospitals where parents of newborns could enrol their newborn infants in public libraries.

According to the statistics given by the NLB, Singaporeans borrowed a total of 22.5 million books in 1997. In 1998, the number of books borrowed increased to 24 million. Nonetheless, despite the increased number of loans, readership is still low, especially when cross comparison with other international communities is made. The Singaporean reader reads an average of 8.3 books a year compared to 25 and 18 among the Americans and the Japanese respectively (Yin, 1998).

This clearly shows that despite massive national efforts and investments, Singaporeans still have a long way in making reading part of their culture. One possible explanation for such phenomenon is the practical approach to reading adopted by most Singaporeans. Reading is viewed by most as a means to an end, for example, one reads to pass the examinations or for job interviews. To many Singaporeans, reading is not an end in itself or an activity that excites and fulfils one's intellectual growth but simply to meet the immediate practical needs.

2.1.7 Independent Reading in Singapore schools

Apart from efforts made by the NLB, local organisations (for example, the Society for Reading and Literacy) and the National Book Development Council

to encourage reading among Singaporeans, the Ministry of Education (MOE) has been very active in promoting the reading habit in schools. The Curriculum Branch, Schools Division of MOE released a set of guidelines in 1984 that allow each school the freedom to develop reading programmes. The Extensive Reading Programme (ERP) and the Sustained Silent Reading (SSR) have been introduced and implemented by almost all primary and secondary schools with the specific purpose of promoting the reading habit among students and encouraging them to use library resources. These programmes are not uniquely carried out in Singapore.

As stated earlier, the ERP was first started in 1985 with the aim of getting students interested in reading widely for pleasure. It is important for students to read beyond school textbooks to further develop their communication skills. Students are encouraged to read at their own time, at their own level and to borrow and read as many books as possible within a year. Teachers are not to pressurise students but to monitor and motive them. In ERP, the watchwords are quantity and variety, rather than quality (Davis, 1995). Although students are allowed to borrow as many books as they want, they do not necessarily read those books because they do not have the time and opportunity. Hence, the USSR programme has been implemented to set aside 10 to 35 minutes (daily or weekly) of curriculum time to allow the entire student population to read in school.

However, these programmes are most beneficial to naturally ardent readers who read a wide variety of books. The detriment lies in the reluctant readers who often read the same book over and over again or open a book without reading. In the ERP and USSR, teachers are unable to monitor closely students' reading

progress because they merely serve as role models to highlight the importance placed on reading.

The Whole Class reading programme has been introduced by some schools to supplement the ERP and the USSR. A teacher introduces a book to the class and gives personal reasons for her choice. Students are then asked to read and discuss the book as a class within curriculum time. This programme allows the teacher to monitor the progress of the students together. But, at the same time, classroom reading poses a challenge to the teacher as he or she has to select books that capture the attention of all students in the class.

To further encourage reading among secondary school students and to integrate IT into curriculum, the MOE launched the Extensive Reading and Information Literacy (ERIL) in 1997. Among the aims are to stimulate an interest in reading (for pleasure and information), cultivate the reading habit, provide students with ample opportunities to practice information literacy skills and become information literate (cited in Yin, 1998).

Secondary and Junior College students are also encouraged to carry out group Project Work to develop and stimulate their thinking skills and creativity. Both the NLB and school libraries stock resource files with references to books, newspaper articles, websites and audio-visual (AV) materials for these project works. However, indirectly, these project works merely push students to read in order to gather the information needed.

Despite making various reading materials and programmes available to students, the reality is that many of these programmes are implemented without proper

monitoring and critical evaluation. Sometimes, schools conduct their own assessment and evaluation by using tools like Wits or Staff Suggestion Scheme. At times, these annual evaluations become a routine with very little value for significant improvement.

With the implementation of the clustering system in the Singapore education service in 1997, school principals and teachers within the same cluster share and exchange ideas on how to implement and evaluate reading programmes. However, no evaluation of such reading programme is done at the national level. Even if evaluation is carried out at the ministry level, some information are not easily accessible by schools to be shared among teachers who are directly or indirectly involved in the reading and literacy programme.

The establishment of the Centre of Research and Practice Pedagogy (CRPP) by the National Institute of Education in Singapore in 2002 is an attempt to look at the various aspect of literacy in a more critical manner but more is needed to be done by the Singapore Education Ministry to uplift the standard of reading among Singapore students. It should be pointed out here that one of the aims of this study is to look into some of the various assessment tools that could help in the implementation, evaluation and assessment of a reading programme in a Singapore secondary school.

2.1.8 Electronic Media, Digital Text and Screen-based Reading

According to Ross, McKechnie & Rothbauer (2006), attempts made to provide empirical evidence that electronic media is killing off reading have generally been unsuccessful. On the contrary, adolescents who are Net savvy and have access to electronic texts find that reading digital text is fun and engaging. In his

study, David Reinking (2001) observes that middle class school students read more books when introduced to the computer-based activity. He feels that enjoyable reading practices could be promoted through digital text and context. He put forward four arguments that supported his view.

First, the reading experience is literally interactive or transactional. The reader manipulates the digital text in active ways according to his or her motivation level, thereby changing the text through the process of reading. This transaction between text and reader is virtually infinite.

Second, digital text can mitigate the "Matthew effect" (in which early successes in acquiring reading skills usually leads to later successes) in a reading context because more opportunities for help for struggling readers are embedded within the digital text itself. Digital text can adapt to reading difficulties by responding to simplified vocabulary, syntax, context, or visual clues

Third, electronic and digital texts can fulfil a broad range of psychological and social needs. The availability and accessibility of such text in internet conveniently allow young people to explore topics of their interest on the spot; thus more likely to increase engagement in reading.

Finally, he reiterates that electronic text invites a playful and creative reading stance as it brings the element of fun. From his observation, students' engagement with literacy activities increased when they participated in the online book review projects.

Liu (2005) attempts to investigate reading behaviour in the digital environment by analysing how people's reading behaviour has changed over the past ten years. He posits that with an increasing amount of time spent on reading electronic documents, a screen-based reading behaviour is emerging.

This phenomenon of screen-based reading behaviour is characterised by more time spent on browsing and scanning, keyword spotting, one-time reading, non-linear reading and reading more selectively; while less time is spent on in-depth reading and concentrated reading. He also observes that there is a decreasing sustained attention among screen-based readers.

Medical experts have advised caution in spending too much time on screen based reading because it could lead to discomfort among computer users. However, this would depend on the nature of the task and length of time spent at the computer (William, 1998). The STAR reading programme which promotes screen-based reading takes into account all these factors to minimise and even eliminate the negative impact on the students during online reading activities.

2.1.9 Impact on this Study

Although the value of reading is undisputable and despite the various national and school programmes implemented in Singapore schools to promote reading and literacy, Singapore children have not developed the interest in reading for leisure and pleasure. This view is echoed by Perrin (1999), an expatriate teacher teaching in one of the secondary schools in Singapore, and Yeo (2002), a teacher-researcher who had conducted a school-based survey in a primary school.

Since information is a 'commodity' of the future, a lot more is needed to be done to cultivate the reading habit, especially among the less academically inclined students like those in PYSS who are mostly from the lower income group. Acquisition of literacy skills would give them an advantage in the KBE world. The need to encourage reading among students with similar profiles is highlighted in the findings of the NCTE (as discussed in the earlier part of this study) in which the majority of middle school readers who are mislabelled as being struggling readers are students from lower socioeconomic backgrounds.

How are related theories and research findings on reading (mentioned above) relevant to this research? The framework introduced by Guthrie (2000) and Reinking (2001) serves as a guide for the untrained Reading and Media teacher-researcher in designing a reading programme to promote interest and motivate students to read.

Issues that interest and motivate students, themes that normally engaged adolescents, the use of technology and other forms of media like DVD, CD-ROMs and internet were utilised during the reading programme as extrinsic rewards to entice and encourage participants to read. Hopefully, the reading programme would inculcate sustained interest in reading and encourage students to be life-long readers.

This study looks at how an Alternative Reading Programme (ARP) can be made more fun, exciting and interesting from students' perspectives. Through the preliminary data gathering, discussions and negotiations with students, the researcher tried to identify and match students' reading interest with available materials in the MRL using the theme of **power** which is linked to the concept of

'absolute interest' (Schank, 1979) or 'emotive interest' (Kintsch, 1980) as discussed earlier in the literature review.

This study also adopts the definition of the process of reading that incorporates reading beyond print-based materials and the contextual setting. The use of computer technology and its paraphernalia excite the participants especially among those who did not have or could not afford to buy personal computers.

It is hoped that the implementation of the STAR project would further stimulate students' interest and motivation in reading and concomitantly, improve the basic functional literacy and ultimately the academic performance of PYSS students and others who were exposed to the programme. In addition, this school-based action research aims to expose students to other forms of literacy, namely critical and self literacy. Details of these activities will be discussed in Chapter Three.

2.2 The Media Resource Library

The Media Resource Library (MRL) serves a very important platform in supplementing the instructional and non-instructional programmes of the school. Within the Singapore education system, the MRL has evolved from playing a minor to a critical role in students' learning development. The main traditional function of the school library was restricted to the lending of books and later to the teaching of library skills. But with the emergence of new technology and explosion of information, the library plays a very significant role in supporting the new focus in education by developing human resource programmes.

2.2.1 The Evolving Role of Media Resource Library (MRL) in the School

Over the years, efforts in encouraging reading and creative thinking among students have resulted in the evolution of the role of the school library. The school library has grown from a department that loans books to students to an institution that implements meaningful programmes and generates instructions towards expanding students' horizons and raising their self-expectations. With the advent of new technology and information explosion, the library has developed human resource programmes to enhance learning and expose students and library users to a wide range of literary genres (Bruce, 2001; Callison, 1986; Lance, 2001).

In its report, *Realities: Educational Reform in a Learning Society*, the American Library Association's Task Force on Excellence in Education emphasises the relationship between school media programmes and free inquiry learning (cited in Callison, 1986). School libraries play a very significant instructional role in students' acquisition and use of knowledge, self-discovery and development of lifelong learning skills. The report states that "school libraries serve as

learner-oriented laboratories which support, extend, and individualise the school's curriculum" (ibid: 78).

Studies have also shown the impact of good and meaningful programmes under the MRL on students' academic achievements (ibid.). A study conducted by the International Association for the Evaluation of Educational Achievement Language Education (IEA)[18] supported the above assumption. Among the factors identified as contributing to differences between high and low scoring countries in developing interests in books and nurturing reading habits are large school libraries, large classroom libraries, regular books borrowing, frequent silent reading in the class and frequent story reading aloud by teachers.

Research study by Ron Blazek (1982) as cited in Winn (1991) concludes that teachers' influence is considered the most tenable explanation for students' use of non required library materials. He detects that an influential teacher can effect changes in students' reading habits without threat of punishment or promise of reward. The amount of teachers' influence depends on the degree of personal involvement in the effort to change students' behaviour — the more teachers show they care the greater will be the students' response. A relationship is then forged between students and teachers; with students having the highest respect for teachers whilst their self esteem is also boosted. This premise leads to the following discussion on the changing role of a media specialist/teacher librarian.

The latter is evident in the PYSS library as it has thirty media student prefects who helped in the day to day running of the library, which includes the

[18]The IEA has been coordinating cross-national studies in a variety of subject matter since the late 1960s.

organisation of talks on books, upkeep of the library and updating the school website. The close relationships between the PYSS library teachers and students have made the media prefect committee stronger than the school's prefect board.

2.2.2 The Changing Role of Teacher Librarian or Media Specialist

The importance of the school's MRL unit underscores the significant role of the teacher-librarian. Among the school staff, the teacher-librarian's role is unique. According to the Media Resource Library Handbook, Singapore (1999) the teacher-librarian integrates teaching skills and librarianship. He or she is responsible for the school library; accountable for the supervision of library resources; and entrusted with ensuring accessibility, relevance, currency and quality of materials to support the school's curriculum.

In the past, the teacher-librarian was considered as a 'keeper of books'. His or her role was strictly administrative in nature. However, with the development of a holistic approach to education and the emphasis on information literacy, the teacher-librarian is now recognised as possibly the most qualified information professional within the school (Credaro, 1998). Teacher-librarians play a vital role in educating students to become information managers and lifelong learners.[19] Lemke (1993) observes that the creation of new educational theories is producing a shift in the teaching paradigm. The emergence of multi-media resources has expanded the depth of the library collection, and thus, the scope of the teacher-librarian's role to include being a media specialist.

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[19]In countries like the United States and Canada, school librarians must first be educated as teachers and then as library media specialist which constitute part of the masters' degree programme.

According to Starker,[20] a media specialist is an **information broker**, a **cyberarian** (a librarian who extract information from world-wide using computers as tools of research) who has to do a lot of online research, a **mediator** between the data base vendors, technical staff and users, an instructional and media **consultant** to teachers, an information resources **instructor** and **trainers, a** facility and personnel **manager,** an acquisition **expert** and finally, an **advertising** and **marketing specialist.**

Lance (2001) identifies three roles of the school library media specialists. As teachers, teacher-librarians advance the instructional aims of the school. As providers of information access and delivery, they develop the libraries' collections and facilitate the usage. As programme administrators, they serve as media centre managers and advocates of information literacy.

Henri (1996) reaffirms the importance of retaining the word 'teaching' in the title of teacher-librarian/media specialist. The possibility of replacing teacher-librarians with librarians and technicians is of major concern to Henri who states that the Director of Information Specialist (DIS) plays a different role to that of a teacher-librarian. Teacher-librarians have the knowledge of the school curriculum in addition to their managerial experience and librarianship. Lemke (1993) reiterates that with the incorporation of multi-media applications, curriculum developments demand a higher degree of technologically advanced methodology that only the teacher-librarian is aware of.

[20]A specially organised course on library management was jointly organised by the National Library Board (NLB) and Singapore American School (SAS) for library teachers in Singapore in 2003. Three teacher-librarians from PYSS, including the researcher, attended the two-day course conducted by Ron Starker, a head specialist from the Singapore American School.

2.2.3 MRL in Singapore Schools

All schools in Singapore have their own MRL. It is an integral part of the school that provides the resources to supplement and complement instructional aims. The role of MRL as outlined in the Principal's Handbook (MRL Handbook, MOE, 1999:1; foreword by Kwek Hiok Chuang) is:

> The school MRL should be the centre of the school's learning and teaching activities, especially the promotion of interest in reading among school students and inculcating in them independent learning skills. Care and thought need to be given to the organisation and development of MRL and its services.

Almost all schools are provided with at least two computer laboratories so that teachers are able to integrate technology with teaching and, at the same time provide enjoyable lessons for their students. Since all school libraries are computerised, students can access online database to search for materials they require. Thus, school libraries in Singapore are well-equipped and well-run. On average, the annual book circulation rates for school libraries are about 30 books per student for primary schools, eight books per student for secondary schools and 19 books per student in junior colleges (Mok, 1994). However, in general, schools in Singapore (with the exception of independent and private schools)[21] do not have the luxury of having an expert media specialist trained in teaching and librarianship manning the library. Normally, a committee comprises three to six teachers (depending on the size of the school population) and the HOD of MRL and IT runs the MRL department.

[21] In 2003, the researcher visited the Singapore American School (SAS) library and was enthralled with the way the library functions to support the entire school population. Although all four school levels—elementary, junior, middle and high school— are housed within a campus site, each has its own library. The head of the library has a minimum of a specialist Master's degree in Library science, while the rest of the librarians have at least a basic degree.

2.2.4 MRL in Ping Yi Secondary School

Ping Yi's MRL is well- known to house one of the best library facilities in the eastern part of Singapore. It has a collection of twelve thousand books and two thousand CDs in 1999.[22] In the same year, the school spent $170,000 to improve the library facilities and created a learning centre within the library to make it more conducive for teaching and learning. The MRL is under the responsibility of the HOD IT, who has to oversee the IT infrastructure, MRL and other audio-visual materials. The HOD IT is assisted by six teacher-librarians to promote various reading programmes. The school is fortunate to have one full time library technician to man and operate the library.

The MRL's reading programmes—conducted in English or in students' mother tongue languages (Malay, Mandarin and Tamil)—are to supplement the Instructional programmes for language learning. Besides promoting reading on weekly basis, the MRL organises various annual events such as Library Week, Media Camp (leadership cum social event for media leaders and members), National Education Activities (which includes the commemoration of Racial Harmony Day and International Friendship Day), Science Week and Humanities Week.

Although some of the mentioned programmes organised by the MRL are not peculiar to PYSS, the degree of functioning of the library and the librarian as shown in the Media Specialist Taxonomy (Table 3) reflects the level of a school MRL's involvement in terms of the role and support the MRL provides to the school. The STAR Project is one of the many enrichment programmes organised

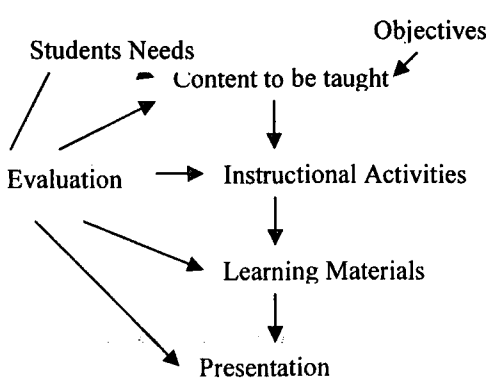
[22]The figure was released by the HOD IT cum MRL, Mrs Caryn Ann Leong, during the researcher's initial interview with her in early 1999.

under the umbrella of PYSS MRL department to enhance the teaching and learning journey of PYSS students.

By developing a specially crafted interdisciplinary reading curriculum, the researcher feels that she has made a contribution to enhance the functioning of the PYSS MRL and thus, scaling up to the higher level. Previously, the PYSS library teachers were operating at level '7'; however, with the full implementation of the STAR project in which a systematic curriculum integration was crafted by the teacher-librarian and students, the status of the library teachers moves up to level '11'. This falls in line with the aims of PYSS school library which are encapsulated in the concept of 'Future Library Aspiring Super Heights' (FLASH).[23]

[23]The concept of FLASH was jointly developed by the PYSS Head of MRL and the researcher when PYSS was invited to a present paper at the national conference called Library@School. The implementation of STAR project is a manifestation of the operationalisation of FLASH.

Table 3: Library Media Specialist's Taxonomy[24]

Level	Level Description	Taxonomy	Details of Description
1 2	No involvement Self help warehouse	Level 1 and 2 constitute the warehouse building block	1. The library media centre is bypassed entirely. 2. Facilities and materials are available for the self starter.
Level	Level Description		Details of Description
3 4. 5 6 7	Individual Reference Assistance Spontaneous Interaction and Gathering Cursory Planning Planned gathering Evangelistic outreach	Levels 3-7 concentrate in direct services to students and teachers.	3. Students or teachers retrieve requested information on materials for specific needs. 4. Spur-of-the-moment activities and gathering of materials occur with no advance notice. 5. Informal and brief planning with teachers and students for library media centre involvement - usually done in the hall, the teachers' lounge or the lunchroom. 6. Gathering of materials is done in advance of class project upon teacher's request. 7. A concerned effort is made to promote the philosophy of the library media centre programme.
Level	Level Description		Details of Description
8 9 10 11	Scheduled Planning in the support Role Instructional Design, Level I Instructional Design, Level II Curriculum Development	Levels 8-11 are the building blocks of resource-based teaching.	8. Formal planning is done with a teacher or group of students to supply materials or activities for a previously planned resource-based teaching unit or project. 9. The library media specialist participates in every step in the development, execution, and evaluation of a resource-based teaching unit. LMC involvement is considered as enrichment or as supplementary. 10. The library media centre staff participates in resource-based teaching units where the entire content depend on the resources and activities of the LMC programme. 11. Along with other educators, the library media specialist contributes to the planning and structure of what will actually be taught in the school or district. 

[24]The table is produced by David Loertscher (1988: 5) cited in Winn (1991).

2.2.5 Impact on this Study

Quality programmes initiated by teacher librarians or media specialists can have an impact on the learning outcome of students. This is possible when the MRL is manned by qualified staff that not only has the vision to develop programme to support the school literacy programme and students' academic achievement, but at the same time, has the capability to organise strong teams of learning communities among students and staff and if possible, all the stakeholders of the school which include parents and members of the alumni.

Quality staff and programmes would serve as magnets attracting members of the school community and thus, make the library the learning hub in the school. This would be in line with the view of Dalin and Rust (1996) who see the need for teachers/educators to shift from the developing manpower to brainpower — quality educators have to produce quality learners to meet the demands of the KBE.

Based on the brief research on the role of MRL and teacher librarian towards students' learning and literacy development, the researcher concludes that committed and dedicated staff of MRL who have visions and strong caring orientation towards students would make a significant difference in the organisation of quality programmes that support and enhance the process of teaching and learning within the school. The implementation of the STAR project is thus seen as an attempt to realise the aforementioned roles and at the same time as an effort to operationalise the PYSS FLASH philosophy and move towards the direction of making the MRL the learning hub within the school.

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[26]Those students involved in the project are in the Normal Technical stream, come from dysfunctional and disadvantage family who lacks even basic literacy like simple reading and writing. An example of their new learning experience is during the Job Shadowing Project where those students had, for the first time, gone to the main banking offices located on a building's 50th storey in the heart of the Central Business District.

2.3 Technology and Literacy

Technology has significantly affected all domains of our lives. Concomitantly, changes in technology have also caused a significant shift in educational practices, pedagogy and paradigm.

2.3.1 Definition of Technology

The explosion of technology has indirectly expanded the concept of reading and literacy to go beyond traditional print-based books and magazines. Lonsdale (1994) cautions that there is a danger of perceiving reading in the traditional and narrow way because throughout the history of human civilisation, individuals have always 'read' a range of phenomenon, fortunes, symbolic drawings, stars, archaeological remains, transmitted signals and even people's mind and behaviours. With the emergence of new technologies, there is a need to re-look and redefine the concept of reading and literacy.

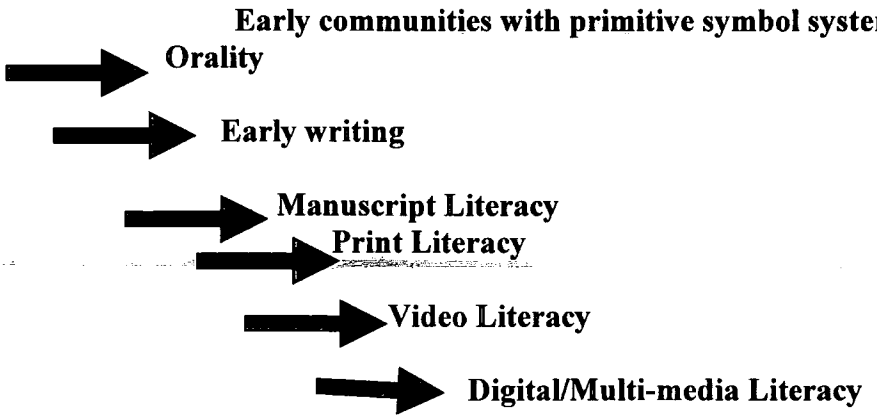
What do we understand by the word technology within the context of school? The layman tends to equate technology with computers. However, in the professional field, instructional technology is defined as "the theory and practice of design, development, utilisation, management and evaluation of processes and resources for learning" (Seels and Richey, 1994 cited in Driscoll, 2001: 336). Technology refers not only to computer hardware and software but also to the processes involved in "managing learning and the learning environment; the models used in designing, developing, and evaluating instruction; and the strategies implemented for improving human performance" (Ibid.).

2.3.2 The Link between Technology and Literacy

Having defined the concept of technology, let us look at its relationship and impact on literacy. The pervasive nature of educational technology has nudged reading and literacy instructions beyond oral and print-based tradition to embrace online and electronic texts and multi-media. Reading has expanded vastly from paper and books to include technology. By changing the way information is absorbed, processed and used, technology is influencing how people read, write, listen and communicate.

Figure 4 outlines the changing concept of reading and literacy over the period of time. According to Bruce (1997), society has moved from the stage of 'orality' to digital literacy. This movement does not simply reflect the change of technology, but the social aspects of our lives as well. Technology is linked to literacy and social constructs that include equity, nationality, ability, empowerment and other aspects of our social life. Bruce concludes that "technologies do not oppose, replace, enhance or otherwise stand apart from literacy, but they are part and parcel of it; they are within us, imbued within our beliefs and values and we are within it" (Ibid.: 307).

Figure 4: Literacy Development in Relation to Technologies



Source: Bruce (1997)

Although technology promises new ways of promoting literacy, educators' reactions to it have been mixed. Some have embraced technology with unbridled enthusiasm while others are still sceptical and have held it at an arm's length (Holum and Gahala, 2001). Nonetheless, the growing influence of technology has caused many educators to acknowledge that they need information on teaching literacy skills in this Digital Age. Modern literacy therefore, embraces new technologies and new technologies produce new literacies. Researchers and educators of literacy are studying the rapidly and continuously emerging new literacies to effectively exploit new ICTs. What are these new literacies?

2.3.3 Contextualising the New literacies of ICT in Theory and Practice

The digital age brings along its own computer-based language such as signs and symbols, computer-based java language, hypertext and links. Thus, to be fully and functionally literate, students need to master four kinds of literacy resources (Freebody and Luke, 1990). The first is the knowledge of **code-breaking** that involves decoding and encoding codes and conventions of written and spoken text. The second is **meaning-making** which entails knowing about or using meanings conveyed by written or spoken text. The third is **text-using** or knowledge of using different text types. The fourth is **text-analysis** which requires knowing about and using cultural and ideological bases on which text are produced and used.

The New London Group (1996) coins the concept of multi-literacies. According to its members, the multiplicity of communication channels and the increasing cultural and linguistic diversity in the world have resulted in a broader view of literacy. These multi-literacies theorists argue that school curricular should be redesigned to mesh with different subjectivities and students' experiences. Such

approach to pedagogy would allow students to access the evolving language of different communities, work and power.

Similarly, Snyder (2002) uses the term 'silicon literacy' to describe the burst of new technological languages. She asserts that in an electronically mediated world, being literate is to understand how the different modalities—signs, pictures, words and sounds—are combined in complex ways to create meaning. Language does not consist of grammar, lexicon, and semantics but comprises a wider range of semiotic systems that cut across reading, writing, viewing and speaking (Snyder, 2001b; Street, 2001). Understanding these multi-modal texts requires an interdisciplinary range of methods of analysis: linguistic, semiotic, social, cultural, historical and critical.

The above perspectives on new literacies are supported by Leu, Kinzer, Coiro and Cammack (2004). They also provide another comprehensive perspective of new literacies of the internet to include skills, strategies and dispositions necessary to successfully exploit the rapidly changing ICTs for personal growth, pleasure and work. According to them, these new literacies allow users to use the internet and other ICTs to identify problems, locate information, analyse the usefulness and reliability of information, synthesise information to solve problems and communicate solutions to others. Some of the principles of new literacies identified by them are as follows:

- Internet and other ICTs are central technologies for literacy within a global community in an information age;
- There is a need to acquire new literacies to fully access their potential;
- New literacies are deictic and multiple in nature;

- The relationship between technology and literacy is transactional, i.e. new envisionments of literacy by talented teachers can also redefine technology;
- Critical literacies are central to the new literacies — the ability to evaluate information critically becomes important; thus new skills are required to make evaluations; and
- Learning often takes place within socially constructed new literacies — there is the need to take advantage of learning from one another because different students possess different new literacies.

After looking into the variations in the concept of 'new literacies' with the growing influence of technology, the researcher then examines the changing education scenario in Singapore that has led to the development of this study.

2.3.4 Technology in Singapore Schools

Students in Singapore have been exposed daily to a wide range of ICTs for the past decades. Technological inventions such as television, radio, computer and video games, Walkmans, CD-ROMs, DVDs, mobile phones and personal digital aids (PDAs) play an important part in their daily lives. With the availability and accessibility of Singapore Cable Vision, Singapore One, NLB's eLibraryHub and the Students Virtual Community (SVC), Singapore children are exposed to various forms of technologies.

These technologies can be and are used for information, entertainment or education. Nevertheless, such systemic change across the board would inadvertently caused voluminous changes in educational policies and strategies.

The MOE had launched IT Materplan 1 in 1997 and II in 2002 to address to the importance and use of technology in schools.

Teachers are encouraged to integrate ICT in teaching and learning by conducting multi-media lessons or creating online learning materials and activities for students (Doiron, 2002). The 'chalk and talk' method is considered obsolete in this digital age (Koh, 2000). The use of multi-media resources—audio, video, DVDs, CD-ROMs, internet—have changed significantly the way teachers conduct lessons and engage students' attention. The impact of technology in local schools could be seen from the speech made by the former Senior Minister of State (currently, Minister of Education) Tharman Shanmugaratnam during the iTopia 2002:

> Annual evaluations conducted by MOE have consistently revealed that students find that IT makes learning more interesting. In the last such evaluation exercise in September 2001, 90% of students felt that IT had made their lessons more interesting. The vast majority also felt that the use of IT had increased their knowledge (82%) and improved their learning (77%). Each of these perceived benefits were most pronounced at the primary level. IT has allowed for greater interaction among students. Over two thirds of teachers (68%) pointed out that the use of IT as a teaching tool had encouraged more active pupil participation in class. And almost two thirds (64%) of the students felt that IT in the classroom had stimulated more discussions with their classmates. Creativity has been evident in our students project work, as well as in the products they create for various IT-based competitions.

2.3.5 Benefits of Using Technology

Despite the figures and statistics given above, are there 'real' learning taking place among our local students? This question is difficult to quantify because of the difficulties in measuring the concept of 'real' learning.

There are educationists who believe that too much exposure to computers could stunt a child's imagination. Compared to reading — where children could be

emotionally engaged — the multi-media technological environment constantly exposes children to sounds, bright colours, moving pictures and other highly penetrating stimuli which are purely sensory jolts. Furthermore, computer activities are highly sedentary. Indulgence in computer games could affect children (and adults) socially because they could get engross in the virtual world and become socially withdrawn from human relationships. There is also the fear that older children (teenagers) do not cultivate the skills to process information from the internet but merely 'cut and paste' these information in their project works (Pavri, 1998).

Albeit, personally and through experience, the researcher believes that the use of multi-media resources in teaching does stimulate students' interests in learning because it allows individual students — whether auditory, visual or kinaesthetic — to adopt and adapt to and be captivated by visual and animated text and presentations. For some students, the interactive website projects offer them the opportunity to share ideas and develop collaborative plans in the virtual world. These students are generally from the achieving group with strong literacy capability and confidence. They are more willing to venture into the cyber world. The less achievers or 'normal' students prefer the use of email or chat lines to communicate with other students from within and outside the school.

Technology also supposedly enhances teachers' abilities to extract vast information from the internet and to deliver materials in a more vibrant manner if teachers are able to master computer skills and embrace the critical pedagogy to teach the various aspects of literacy to the new breed of IT savvy students.

2.3.6 Impact on this Study

The concept of new and multi-literacies in relation to the changing environment has profound impact on this study. First, the concept challenges teachers who are untrained in the new literacies and expected to teach students and equip them with the new sets of skills and competencies. Second, though policies and infrastructures are made available at the school level to embrace the new literacy, the question to be addressed is: are teachers able to change their mindset to accept and teach the new literacy and pedagogy? Third, awareness of global technological changes and the availability of the latest educational literature on literacy need not necessarily be sufficient in bringing about meaningful innovation in schools.

There is a need to synergise the two changes in order to produce and implement effective lessons for diverse group of students to meet diverse curricular aims. This requires more than knowledge and vision, but a paradigm shift among all key educational players to produce the desired results, from the policy makers, all the way down to school management and finally to teachers.

The multi-media STAR project could therefore be seen as an attempt to promote reading by introducing hybrid methods and textualities (Luke, 2000b:83) where the integration of the conventional with new emerging literacies is made. The materials used include CD-Roms, Internet, Web design E-reading or E-Learning Portal with digitalised text that contains blended textual forms of linguistic codes, audio and visual semiotics that contain sophisticated designs of pictures, animation and moving images, and video clips. The use of all these materials had been carefully and systematically woven in every stage of the project—planning, development, documentation, analysis and presentation.

Another feature of this project is the use of technology itself which is done at three different levels. First, students **learn with technology** — the content aspect of functional literacy and self literacy is acquired by using technology. Second, students **learn about technology** — the acquisition of JIT skills is part of technological and information literacies. Third, students **learn from technology** — various forms of multi-media are used to achieve learning aims. During the implementation of the project, participants developed an E-learning portal with the help of the senior students by creating websites, making video clips and conducting E-research.

Thus, this study also looks at how reading interest and motivation could be enhanced and examines how teaching and learning could be transformed by the use of technology that comes with the parallel change in literacy content.

2.4 Theory of Constructivism

The fourth strand of literature review that influences the scope of this study and the instructional materials used in the STAR programme is the cognitive theory of learning with specific focus on constructivism. The continuous process of constructing and reconstructing the multi-media, multi-literacy reading programme – which is based on the cyclical of action research and reflective inquiry – was a collaborative effort between the researcher and her students. Concomitantly, many of the principles of constructivism were applied throughout this study.

2.4.1 Definition of Constructivism

Constructivism is an approach to teaching based on research of how people learn. Many researchers say that each individual constructs knowledge rather than receives it from others. Although there are disagreements on how to achieve constructive learning; constructive teaching is based on the belief that students learn best when they gain knowledge through exploration and active learning. Hands-on materials are used instead of textbooks, and students are encouraged to think and explain their reasoning instead of memorising and reciting facts.

Education is centred on themes and concepts and the connections between them. As far as instruction is concerned, teachers should try and encourage students to discover educational principles by themselves. Teachers and students should engage in an active dialogue (Socratic learning). A teacher's task is to translate information into a format appropriate to a student's current state of understanding. Curriculum should be organised in a spiral manner so that students will continually build upon what they have already learned (Bruner, 1976; 1990).

Constructivism exhorts the individual to construct and create his or her own knowledge and meaning. It sees the learner as an active, independent and self-regulated participant in the learning process. Students are not being perceived as blank slates which teachers write on or empty vessels which teachers have to fill; but thinking learners who construct their own reality or at least interpret it based on their perceptions of experiences. Constructivists believe such process would help learners to internalise and reshape or transform new information. Transformation occurs through the creation of new understanding that resulted from the emergence of new cognitive structures (Jackson, 1986; Gardener, 1991b cited in Brooks and Brooks, 1993).

The rationale for using this theory of learning is because the process of learning is a complex process; it defies the linear precepts of measurement and accountability. Students' knowledge consists of internally constructed understandings of how their world functions. New information either transforms or does not change their old beliefs. The quality of the learning environment is not merely a function of where the students 'end up' at testing time or how many students 'end up' there. The dynamic nature of learning is difficult to capture on assessment instruments that limit the boundaries of knowledge and expression. As such, we have to look for a new way and method of looking at assessment (Brooks and Brooks, 1993).

2.4.2 A Process of Making Personal Meaning

Consequently, many programmes and curriculum began adopting and implementing the notion, as manifested in many classroom instructions, that students learn to make their own meaning. Examples of such programs include process writing, problem-based learning, project-based learning and community

learning concept. In a constructivist classroom, the teacher searches for students' understandings of concepts; then structures opportunities for students to refine or revise these understandings by posing contradictions, presenting new information, asking questions, encouraging research and/or engaging students in inquiries designed to challenge current concepts (Ibid).

Whether learning is meaningful or not, only the learner knows because meaningfulness is an expression of the relationship between the material of learning and the learner's existing understandings. Marton and Ramsden (1998; cited in Moon; 2003) state that the constructivist looks at the implications of a qualitative change in the learner rather than a quantitative change in the amount of knowledge someone possesses. The qualitative change is in the understanding that the learner constructs.

As a teacher, the researcher seeks to influence the learning of her students by the care taken in the construction of the STAR materials; and by adopting a multi-media and multi-pedagogy teaching approach so that students will more likely be interested in reading and thus, understand the learning process. This learning process is further strengthened by having a semi-structured learning log and reflective journal to check students' understanding on what is being taught and 'caught' by them. However, it should be noted that whether participants in the programme that was held during the research did or did not reflect on and write all the learning processes in their reflective journal is a separate issue because there were many moments when students underwent a process but had failed or forgotten to record those meaningful experiences. In future, the researcher will remind students to be more aware of their learning process.

The other layer of the reflective process that capture the constructions of meaningful learning of students is done through non-formal assessments, such as the completion of task sheets, portfolios and other related group project work.

2.4.3 Characteristics of Constructivist Learning Mode

According to Brooks and Brooks (1993), there are five central tenets of constructivism in education. First, teachers seek and value students' points of view which lead to differentiation in instruction that is based on students' needs and interests. Second, constructivist teachers structure lessons to challenge students' suppositions. As students come to the classroom with life experiences that shape their views of how the world works, teachers should permit students to construct knowledge that challenges their current suppositions; thus real learning takes place. Third, relevance must be attached to the curriculum so that it is related to students' daily activities; accordingly, their interest in learning grows.

Teachers are to structure lessons around big ideas; not small bits of information. Exposing students to the whole picture first, helps them determine the relevant parts as they refine their understanding of the bigger picture. Finally, constructivist teachers assess student learning in the context of daily classroom investigations; not as separate events. This is because students demonstrate their knowledge every day in a variety of ways. They believe that defining understanding measured by paper-and-pencil assessments administered under strict security perpetuates false and counterproductive myths about academia, intelligence, creativity, accountability and knowledge. Alternative assessment in the form of portfolios should be used.

2.4.4 Teachers' Role

In constructivist teaching, teacher plays a very proactive and intellectually rigorous role. The teacher is an active listener, a coordinator, a manager and a facilitator all at the same time. While listening to what students are telling him or her, the teacher is formulating a plan of action. The teacher does not establish himself or herself as the 'sage', but rather as a 'partner' in the learning process who takes the views and the background of learner seriously so as to stimulate active and meaningful learning. The teacher's role is no longer seen as knowledge or information provider rather the teacher is a guide, facilitator and coach to assist students in learning the use of various strategies.

The teacher inspires students to toy with ideas and manipulate the information that they have gathered. Tan et al (2003) agree that teachers' role is encompassing; they are not just disseminators of information or even facilitators. Since learning has to extend beyond the physical boundary of the classroom, it is pertinent that educators need to become designers of learning environment. The advent of technology has provided much opportunity for teachers to explore their role as facilitators in a constructivist learning environment through online learning platforms.

The above observations on the tenets of constructivism and role of constructivist teachers are in line with the hypothesis presented by the multi-literacies theorists and Guthrie's reading engagement model. These observations are applied to framework of this study. Teachers are encouraged to assume the role of a 'Designer'—designing curriculum to promote independent and flexible learning in which students are looked upon as 'partners' who are actively engaged in the learning process.

Whether students are actively engaged in constructing knowledge individually or collectively, they will be responsible for their learning and are motivated to solve authentic real world problems. This also augurs well with the principle and characteristics of Action Research conducted in this study to improve teaching and learning practices.

2.4.5 The Paradox of Constructivism

One of the strength of constructivism is the ability of the learner to interpret multiple realities and to deal with real life situations. If a learner can solve problems, he or she can then better apply his or hers existing knowledge to a novel situation (Schuman, 1996). Brooks and Brooks (1993)—two advocates of the constructivist school of thought—reproach critics who contend that the constructivist approach stimulates learning only around concepts in which students have prior interests. However, they do realise that although deep understanding — not imitative behaviour — is the goal of constructivism, the downside is that capturing students' understanding of learning is problematic; and that makes it difficult for teachers to fit the experiences and understanding of subject matters into the traditional form of assessments.

Unlike behaviourism, where the learner is focused on a clear goal and can respond automatically to the cues of that goal, Brooks and Brooks concede that one common criticism of constructivism is that it subordinates the curriculum to the interests of the child. For example, if students are to be given materials to read, they will complete the task with the assumption that the rewards system is put in place to promote such positive behaviours. However, in the constructivism model, students will read; and based on the existing schema that they have, there will be variations in interpretations. This would then make it difficult for

teachers to evaluate their learning process using the standard normative assessment. Therefore, an alternative assessment system and getting the exact descriptors are critical for measurement and evaluation purpose. Due to the notion and the nature of the theory that promotes individual and personal learning process, another possible weakness of the application of the constructivist theory is the possibility of a widespread of divergent thinking and variation in actions. Thus, some problems may arise in this study in monitoring and tracking students learning journey.

2.4.6 Impact on this Study

The application of the constructivist theory is seen in two areas. First, in curriculum and instructional design — where the explicit process of construction and reconstruction on the part of the learner is reflected through the completion of the task sheet designed for them (refer to the booklet of Module 1 in Appendix 4); and second, in the philosophy of the intervention reading programme.

The concept of 'Responsibility' is emphasised and it becomes the core value in both learning and teaching processes using constructivist principles of promoting joint and independent learning; it is relatively useful in inculcating the learning of higher order thinking skills (covered under the critical literacy component of the STAR framework using the IT environment as the backdrop). Students' collaborative group projects, the creation of website and the E-learning portal, the effort in organising the open house for iTopia and the activation of LCs among students are some testimonies of the application of constructivism in this study.

2.5 Action Research

In the context of the discussion on viewing the school as a learning organisation to meet the demands of the new paradigm in education, Action Research (AR) can be an impetus for such a change (Lee, 2000). This study is conducted with the aim of evaluating critically the current reading programme; and through reflective teaching practices, engages students in multi-media and multi-literacy learning using various enabling framework and set of thinking tools through the AR model.

2.5.1 Definition of Action Research

Definitions of AR are varied. According to Calhoun (1994), the term 'action research' captures the notion of a disciplined inquiry ('research') focusing on efforts to improve the quality of an organisation and its performance ('action'). To put it simply, AR is about observing what is happening at the school context and to change the school's environment to make it a better place.

Calhoun identifies three types of AR using the criteria of focus, support, audience and impact. They are: Teacher Action Research (TAR), the Collaborative Action Research (CAR) and the School-wide Action Research. The latter has a greater impact and covers the collective interest of the whole school audiences for restructuring and self renewing process in the school.

McNiff, Lomax and Whitehead (2003) present a rather comprehensive explanation of AR. They state that AR focuses on two critical concepts: learning and change. AR is practitioner-based which embodies good professional practice and could lead to personal and social improvement. They claim that AR is responsive to social situations and demands high order questioning; where the

self is considered to be the locus of change in which the practitioners accept responsibility for their own actions.

Another interesting perspective on AR is given by Grady (1998). He sees AR as a particular form of qualitative research that is well suited to school and classroom research projects. He reiterates that a systematic AR provides a more credible concrete basis for changes in instructional practices, curriculum or even classroom management. He defines AR as reflective inquiry undertaken by educators in order to better understand the education environment and to improve practice (ibid: 43). Macintyre (2000) gives a similar definition of AR which is used in the context of this study.

The researcher focuses on students who showed no interest in reading during the weekly MRL enrichment programme, and attempts to find the likely causes. This study aims to introduce a reading programme that will stimulate their interest by seeking their inputs and feedbacks, and to analyse the impact of such actions on reading among these adolescents.

2.5.2 Key Characteristics of AR

Based on the brief discussion of variations in the definition of AR, the researcher focuses on the key feature or characteristic of AR. In the school setting, AR is about teachers or teaching practitioner's learning and handling of local problems. Teachers/practitioners are not to generalise the root and nature of those problems but rather to look at them critically. Action researchers use a variety of research methods to gather data; though qualitative data gathering is more popular. The processes of action research are cyclical and never-ending.

2.5.3 What Constitute Good Action Research Questions?

Bruce (2000) lists five characteristics of good research questions. First, it should be significant; one that focuses on teaching and learning practices that have an impact on students' behaviour or achievement. Second, it should be manageable and researchable so that it is do-able since a researcher often faces time constraints. It should neither be too broad as to be impossible to answer nor too narrow in scope to offer little or no new insight.

Third, the question has to be contextual; one that is embedded in the day to day work of the researcher rather than an extra project added on to existing teaching tasks. Fourth, the research question must be clearly stated and open-ended. It is phrased to generate a broad range of insights or understandings rather than to prove a specific point or to compare experimental and control groups. Finally, the research question has to be self-reflective—one that focuses on practices of the researcher.

In this study, the researcher has made an attempt to use the above as guidelines in the process of formulating and re-formulating her research questions. Students' interest and motivation in reading are important and significant to the researcher because as a teacher librarian who is in charge of the programme, she has to ensure that the programme is effectively carried out. The indicators should include not just the mere display of students' interest through reading, but getting them motivated in reading so that they can ultimately be engaged readers.

Based on the profile and the background of PYSS students, this study is very much contextualised and highly customised as it tries to promote multi-literacy through concept-based curriculum instructions to create awareness of the

demand of new skills and competencies in the KBE. Though the study seems broad, the researcher tries to introduce the concept of multi-literacy or new literacies to students in a neighbourhood school. For some of them,[26] the experience is an eye opener to a world beyond school and their neighbourhood.

2.5.4 Merits and Demerit of Action Research

Action research promises progress in the professionalisation of teaching. The process allows teachers to experience problem solving and to model solutions for their students. Relevant data are collected to diagnose problems, search for solutions, take action on promising possibilities, and monitor whether and how well the action worked. The cycle can repeat itself many times, focusing on the same problem or on another. The process can help develop professional problem-solving ethos (Corey, 1953; Joyce, 1991; Schaefer, 1967; Sirotnik, 1987).

Action research promotes a professional dialogue among teachers regarding their instructional practices in a very non-threatening way. It also promotes collegiality because it brings people together to talk about common things of common interests.

Besides, it can revitalise the entire learning community, as well as aid teachers in reflecting on their classroom practices. It can support initiatives by individual teachers, schools and, schools working with communities and districts. In other words, more than one type of action research can be used in a given setting at the same time, - individual, collaborative or whole-school action research.

However, it needs the pre requisite conditions, in the forms of psychological and professional infrastructure that would help to promote the conducive climate for teachers to embark research and improve their teaching and students' learning.

One possible demerits that is associated to action research lies in its inability to provide causal explanations. This is because action research is normally highly contextualised, involved many variables within a 'system' and this make the process of establishing a simple causal relationship between variables a very complex.

This is linked to the second issue about action research that is the issue of generalisability. As mentioned earlier that action research is highly contextualized and has practical relevance and value to the setting of the research and this would mean that the findings could not be globally generalized.

2.5.5 Impact on the Study

The Singapore Ministry of Education continually tries to raise the professional profile of teachers in society. Together with the trend that calls for the formation of learning organisations, there is no better time than now to introduce the principles of self-organised learning in Singapore schools to promote higher levels critical thinking and innovation in day-to-day activities. The classroom teacher has to constantly engage himself or herself in active reflection, problem solving and more importantly, decision-making and risk-taking.

The STAR project has allowed the teacher-researcher to network and establish partnership with many interested parties—who could serve as co-researchers, critical friends or simply participants—to critically analyse and reflect on her

teaching and students' learning. This study has no wider agenda but reflects a concern with school improvement and raising the standards of the school.

The researcher does not receive any funding to carry out this teacher-led action research. It is an expression of personal and professional interest to help both the researcher and students to maximise their learning journey and to realise their potentials.

2.6 The Concept of Reflective Teaching and Learning

2.6.1 Reflective Practice and Powerful Learning

Learning takes place through experiences that allow us to absorb information by reading, listening or by engaging in various activities. We also learn through interaction and socialisation (Wertenbroch & Nabeth, 2000). In addition, we learn by reflecting on such experiences (Dewey 1933). In the context of this study, there are two levels of learning: one is at the participants' level and the other, is with the researcher herself — when she first embarked on the learning journey to improve her professional practice.

Hopkins (2002) defines powerful learning as the ability of learners to respond successfully to the task that they are set, as well as the task they set themselves; in particular to:

- Integrate prior and new knowledge,
- Acquire and use a range of learning skills,
- Solve problems individually or in groups, and
- Reflect on their successes and failures.

Though this study attempts to examine the reading interest, motivation and habits of the students, it also aims to encourage and develop students to become powerful learners. This is in line with the constructivist approach adopted by this study to actualise an action research that requires the researcher and her students to reflect critically and solve identified problems in a systematic way. The reflective process of both the teacher-researcher and students were observed and recorded in journals.

Before elaborating on process of journalising, a brief explanation on the concept of reflection will be given. Reflection is thinking for an extended period of time by linking recent experiences to earlier ones in order to promote a more complex and interrelated mental schema. The thinking involves looking for commonalities, differences and interrelations beyond their superficial elements. The goal is to develop higher order thinking skills.

2.6.2 Journal as a Reflective and Evaluative Tool

Journal writing is a means of self-expression. Journals are also becoming popular means of recording information and process of thoughts especially in the teaching and learning of language and literacy. In this study, two types of journalising are used: one is the *learning journal* which is a systematic way of documenting learning and collecting information for self-analysis and reflection; the other is the *reflective journal* which is widely used in the area of action research as an instrument for the development of reflective practitioners.

This study confines the use of reflective journal as a learning tool to develop the capacity for critical reflection and making meaning for the researcher and students and, as a document for qualitative analysis. The nature of the stimulus to reflect will have an impact on the quality of the reflection. Surbeck, Han and Moyer (1991) have identified three levels of reflection: The first is **reacting**—to comment on feelings towards the learning experience, such as reacting to a personal concern about an event.

The second is **elaborating**—to compare reactions with other experiences, such as referring to a general principle, a theory, a moral or philosophical position. The third level is **contemplating**—to focus on constructive personal insights or on problems or difficulties, such as focusing on education issues, training methods, future aims, attitudes, ethical matters or moral concerns. The nature of the stimuli or directions provided initially to the learners, as well as the feedback they receive after the initial reflection will determine the extent to which they reach the contemplation level of reflection.

2.6.3 The Links between AR, Reflective Practices (RP) and Experiential Learning

Based on readings and the literature review, the researcher discovers that some of the characteristics of AR are similar to the philosophy and principle of reflective practices written by scholars like Habermas, Dewey, Kolb and Schon (cited in Moon, 2003). Boyd and Fales (1983, cited in Moon, 2003) see reflective learning as the key element in learning from experience. The processes of reflection are therefore, very much associated with experiential learning.

In that sense, the process of reflective practice is shared with AR — i.e. the process of learning begins with a development of a need to resolve and clarify issues, review and recollect the issues, review the emotional state and process of knowledge and idea and, the eventual resolution and possible action and transformation (Moon, 2003).

During the course of this study, the researcher found that there is some overlap between AR, Experiential Learning and RP. Moon (2003) explains the four reasons of why this is so. First, the AR cycle is closely related with experiential learning but demonstrates different sequence of activities that include reflection. Second, AR focuses on actions of individual and not the sequence of mental process of one person. Third, AR provides a bridge in experiential learning and reflection in professional practice. Finally, AR brings about transformation with the aim of emancipation.

Since this study attempts to achieve the transformation of the students' mind in terms of their attitude towards school and life, and specifically their reading interests and motivation, the reasons mentioned earlier coincided with the process and aims of this study.

2.7 The Concept of Integrated Curriculum

According to Heidi Hayes Jacob (1989)—a leader in the Integrated Curriculum movement — curriculum integration is not something new as it was prevalent in the education setting as early as in the 1970s. However, lately there is a revival of this approach to teaching and learning. In the Singapore education system, there is a policy direction calling teachers and practitioners to introduce Interdisciplinary Project Work for the secondary and junior college students.

2.7.1 Definition of Integrated Curriculum

What is Integrated Curriculum? The word 'integrate' is derived from a Latin word which means 'to make whole or renew'. According to Biondo (2000)[27], the American Heritage dictionary's definition of 'integrate' includes "to join as to form the larger, more comprehensive entity" and to "blend, harmonise, synthesise, arrange, incorporate, unify, coordinate and orchestrate".

In a nutshell, Integrated Curriculum is a way to increase student's understanding by teaching across the disciplines — teaching subject areas according to their natural connections rather than in isolation from one another. It focuses on making learning to reflect life so that students see the values of what are being taught, and to prepare them for lifelong learning. There is a strong belief among supporters of curriculum integration that educators in the school must see education as a process for developing abilities required by life in the twenty-first century, rather than discreet departmentalised subjects as currently practised in most secondary schools.

[27] Available at http://www.readingonline.org/past/past_index.asp?HREF=/research/biondo/biondo.html

Shoemaker (1989) lists similar definition of Integrated Curriculum. He sees education being organised in such a way that it cuts across subject-matter, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study. He views learning and teaching in a holistic way to reflect the real interactive world.

Bonds, Cox and Gantt-Bons (1993; cited in Lake 1997) perceive integrated curriculum as a synergistic teaching that goes beyond the blurring of subject area lines to a process of teaching whereby all school subjects are related and taught in such a manner that they are almost inseparable. What is learned and applied in one area of the curriculum is related and used to reinforce, provide repetition and expand the knowledge and skills learned in other curriculum areas. Synergistic teaching does more than integrating subject areas as it presents content and skills in such a manner that nearly all learning takes on new dimensions, meaning and relevance because a connection is discerned between skills and content that transcends curriculum lines.

Integration is a philosophy of teaching in which content is drawn from several subject areas to focus on a particular topic or theme. Rather than studying math or social studies in isolation, for example, a class may study a unit called 'The Sea' – using math to calculate pressure at certain depths; social studies to understand why coastal and inland populations have different livelihoods; geography to look at issues of erosion and how erosion affects the physical and human environment.

Effective interdisciplinary studies (McBrien and Brandth, 1997:55) include the following elements:

- A topic that can be studied from several points of view;
- Two to five valuable themes (or essential questions) the teacher wants the students to explore; and
- An approach and activities to further students' understanding of more than the traditional, single-discipline unit.

In general, all definitions of integrated curriculum or interdisciplinary curriculum include the following: a combination of integrated curriculum subjects, an emphasis of projects, sources that go beyond the textbook, relationship among concepts, thematic units as organising principles, flexible schedules and students grouping (Lake, 1997). In addition, the integrated curriculum is inquiry-oriented. The aims are structured and include contents, skills and processes. Integrative approach starts with students' and teachers' concerns and ideas, transcends rigid disciplines in a search for coherence and meaning, and is built through daily negotiations and interactions (Mathison and Freeman, 1997).

2.7.2 Function of Integrated Curriculum

Integration is seen on one hand to be a means—the interactions, adaptations and influences of parts of a system on the whole; and on the other hand, to be an end—the successful completion of the growth of an organism (Knudsen, 1937). The view of integration as a means is apparent in the vast body of research in cognition. Piaget's constructivist psychology and Bruner's structural cognitivism influenced the development of many innovative courses in the 1960's (Gozzer, 1982). Knowledge is viewed as 'something becoming'; something to construct through active inquiry. Learning is not simply the acquisition of facts but is

believed to induce the restructuring of the learner's cognitive structure or organisation (Marzano, 1991).

The view of integration as an end is associated with the growth of a child-centred curriculum that takes into account the whole child. In this holistic approach, knowledge is perceived within experience and cannot be separated from the personal meaning given to it by individual (Mathison and Freeman, 1997).

According to curriculum scholars Goodlad and Su (1992), an integrated curriculum is intended to bring into close relationship such elements as concepts, skills and values so that they are mutually reinforcing. This concept highlights the integration of content, by blending the disciplines through overlapping skills, concepts and attitudes.

2.7.3 Rationale for Integrated Curriculum

There are three current arguments that give support to the concept of the integrated curriculum. First, the 'intellectual argument' suggests that any fields are enriched by ideas or methods from other fields. Second, the 'practical argument' suggests that the real world of knowledge is connected and new ties are formed every day. Third, the 'pedagogical argument' suggests that learning is seriously hindered by the current fragmented system.

Teachers have found that they want to develop ways to make their classroom more like the outside world. A simple activity of buying lunch, for example, requires students to choose menus from McDonald, Burger King or Pizza Hut. When students go to these places, they have to apply mathematical and scientific tools to calculate costs and nutritional value.

Erickson in her book entitled *Stirring the Head, Heart and Soul*, sees concept-based curriculum as the foundational organisers in curriculum design. She reiterates the fact that it provides depth to learning and focuses on relevant issues and ideas; and is more effective compared to the topic based curricula. The researcher, in her attempt to introduce multi-literacy to her students, tries to apply the concept based curriculum integration by focussing on the word POWER. This concept, as suggested in the literature of reading interest and motivation, provides the rationale for the researcher to combine the two different field of knowledge to develop a purposeful integrated curriculum.

2.7.4 Impact on this Study

The concept-based integrated curriculum model adopted from Erickson is used to develop the curriculum for the STAR project. Different areas of discipline is woven and linked to one another to provide a comprehensive and holistic representation of the so-called new literacies. The enrichment reading programme requires students to apply, integrate and internalise the content knowledge from different fields, and to apply what they read to their everyday activities.

During the course of implementing the STAR project, participants set and accepted the parameters of the various disciplines. As mentioned earlier, participants focused on the main concept of POWER; and with the theme "New Me and New Literacies", participants of the STAR project were given the freedom to read on related screen or print based materials

CHAPTER THREE

RESEARCH METHODOLOGY AND PROJECT DESIGN

The main focus of this chapter is the application of the research design. The chapter is divided into three phases. The first phase provides a description of the research design and the rationale of Action Research; explains the rationale for using both quantitative and qualitative analysis for the study, with detailed explanations of the multiple tools used for data gathering; and lists the details of the instruments used in the study.

The second phase gives an explanation of the first stage or first cycle of AR that involves the initial fact finding and data seeking process to look at the ineffectiveness of the current reading programme; the changes that were taking place within the school that led to this study; the conceptualisation and planning process of the alternative reading programme, including the feasibility study of the multi-literacy reading programme; and the development of the teaching and learning package called *5-in-1*, using the concept-based Integrated curriculum model.

The third phase details the implementation and reviews the new reading programme. A timeline on the research and implementation processes is included to show the phases of development of the STAR project from the conceptualisation stage to the implementation of the pilot test in 1999.

3.1 Research Design

3.1.1 The Rationale for Action Research

AR is used because the nature of this study requires responsiveness, flexibility and action. It is more relevant for practitioners like the researcher who wants to improve her teaching practices as well as to introduce and bring changes in her students' learning journey. It fits the research setting and simultaneously, yields action and research outcomes. Besides, AR allows the researcher to adapt to the situation. The reflective spiral or cyclical nature of AR has given the researcher adequate rigour at each stage of her study.

In addition, AR also allows the researcher to integrate theory and practice — understand the change, action and participation of other key players who were either collaborators or subjects of the study. It allows the use of both the quantitative and qualitative approaches to collect and analyse data. The data collected became the basis for action to change and improve the reading programmes conducted by the PYSS MRL and students' learning outcomes.

AR also provides the opportunity for the researcher to reflect on her professional practice and helps to understand the various aspects of educational changes, students' learning and current developments in the fields of education. The discovery of new information and hopefully, the generation of 'new' knowledge will not only boost the practitioner-researcher's confidence in her professional and decision-making skills but also allow her to share the findings and recommendations with other practitioners.

3.1.2 The Rationale for Mixed Method Designs

Why did the researcher use a combination of quantitative and qualitative data for this study? Simply, the combination met the needs of the researcher to obtain answers for the questions that she had listed at the onset of her research.

The secondary data in the form of annual survey reports churned by the department could be used to superficially answer and explain the effectiveness, or otherwise, of the reading programme conducted by the library unit. However, a thorough examination of the factors or variables that motivate and sustain the reading interests of reluctant and non readers have to take into account primary data that could only be obtained from observing and interviewing students who would be involved in the reading programme.

A deeper understanding of the issues would enable the teacher researcher to have a greater understanding of the relationship of related and relevant variables in terms of explaining the possible causes and context of the phenomenon being studied. Another advantage of using a mixed method or mixed mode is that it allows the researcher to incorporate the strength of each method to obtain a more comprehensive picture of what is being studied. This could be achieved by examining the quantitative outcomes as well as the process that influence the outcomes. In addition, the nature of the data collected is not confined to one type of method and thus, it is helpful to supplement a primarily quantitative or qualitative study with some data from the other method.

Besides the above explanations, many aspects of action research are similar to those of qualitative research in which both numerical data and qualitative data are used (Mc Millan & Schumacher, 2006).

The researcher is aware of some of the disadvantages that arise with the mixed mode design. First, it reflects the researcher's level of competencies in implementing and analysing each type of data. Second, the extensive amount of data collected can be rather overwhelming for an individual researcher to digest and summarise.

3.1.3 The Application of Mixed Method Design in the Study

In term of design, this study reflects the exploratory and triangulation nature of the research by using concurrently, the quantitative data to explore relationships found in qualitative studies and vice-versa. The approach of using three or more types of data collection to converge on the same issue or question is known as 'Triangulation'.

The study reflects the use of different types of triangulation: the first being the triangulation of method – a mixed of quantitative and qualitative method was used, and the second is the triangulation of observers – getting the feedback from teachers, students, parents, trainers and the researcher herself. The observations made by multiple 'observers' would have the effect of enhancing the validity of this study.

In the mixed method design adopted in this study, 'triangulation' means using interviews, observations, reflective journals and other relevant tools for the purpose of data collection and documentation analyses to see if they corroborate or contradicts with the other sources of data. The triangulation provides a convergence of evidence in which the results of both methods supported each other. The process of data analyses can occur and recur in a few cycles before the final direction and findings of the study could be determined. The detailed

process of triangulation to establish reliability and validity of the data collected for this study is presented in Table 4 below.

Table 4: Triangulation Matrix for STAR Project.

Research Questions	Data Source #1	Data Source #2	Data Source #3
1. Is the current reading enrichment programme under the MRL effective in achieving its goal of stimulating reading interest among students?	Teacher interview HOD interview	Student interview	MRL annual appraisal report
2. How could the researcher develop an alternative reading enrichment programme for the non or reluctant readers among these adolescents?	Surveys of students Feedback from teachers, Needs analysis	SMC feedback Critical friends	Reading available literature/attending course
3. What are the factors that can stimulate reading among students? Will the development of a multi-media and multi-literacy reading programme stimulate interest in reading among them?	Feedback from Teachers/HOD	Student interview	MRL term report Reading Expert advice
4. How could the teaching of the multiple dimension of literacy which is reflected in the multiple aims of the school curricular be done without overloading the students and teachers while at the same time optimising the learning experiences of the students?	Pre and post test questionnaire	Students' Learning log and reflective journal	Teacher and trainers reflective journal
5. What will be the key performance indicators used to measure the effectiveness of the programme? Can the criteria of engagement, connections, interaction, and responsiveness be used to measure students' quality learning?	Project work, task sheet, artefacts Portfolio	Exhibition/ Presentation and competition Skit presentation	Interviews with parents involved in iTopia, and feedback from foreign and local delegates
6. Will it be possible for the researcher to share her experiences to help fellow practitioners to conduct school-based Collaborative Action Research? Based on the implementation of this bottom up initiative, what are the learning points tat helped or impeded innovations and reforms in a school?	Having Critical friends/ Informal or formal professional Sharing (School, Cluster, TN sharing)	Consulting Experts from University Publishing relevant articles (TN Conference Proceedings and SMTU Publication	Professional sharing Share of website and e-learning portal (subject to approval of school) TN workshop, and iTopia 2002 & regional conference)

The mixed method allows the researcher to gather in-depth information from many participants and combine both the primary and secondary sources to assist her in deriving an alternative reading programme that interests the students. From the interviews conducted and focus group discussions held with various stake holders, and using the existing school-based annual reports, the researcher had tried to determine the emergence or appearance of any themes that were deemed related to the area of study. Often, the researcher simultaneously gathered both quantitative and qualitative data. The data collected were merged and interpreted to obtain a better understanding of the issue being studied.

The mixed method approach is more potent than using a single method because corroboration or verification from other sources will increase the trustworthiness and credibility of the information as it comes from multiple sources and through multiple channels. In the context of this study, the use of both quantitative (pre and post test) and qualitative approaches enabled the researcher to do a cross reference for each source of data to establish credibility and validity.

3.2. The Sample

The sample of the main study consisted of sixty-five students from secondary two, three and four. They came from different academic streams with varied reading abilities, motivation and interests, classes, level, gender, ethnic groups, age and academic streams. This stratified random sampling was used to classify subjects from three academic levels and streams, namely; the secondary two, three and four and the Express stream, the Normal Academic and the Normal Technical stream respectively.

The streaming described the placement status of the students as mentioned earlier based on the PSLE results. The purpose to have the three levels and academic streams was to ensure a representative sample in terms of academic level and ability.

3.2.1 Stratified Random Sampling Approach

The sample in this study was divided into sub groups. However, the main aim of this research was to look at the reading interest and motivation among the participants, and consequently, not much emphasis was made to make a cross streams or levels performance or outcomes.

The researcher did not conduct experimental study by having a controlled group vis-à-vis the experimental group because it raised some ethical issues. The researcher did not exclude students from participating in the STAR project just because she needed a pre-selected controlled group vis-à-vis an experimental group to study the impact of her intervention reading project. This was because, during the course of the study, some concerned parents (especially parent volunteers and the executive committee members of the PSG who were involved in the project) who came to know about the programme had confronted and questioned the researcher on her selection criteria when their children were not selected for the reading project.

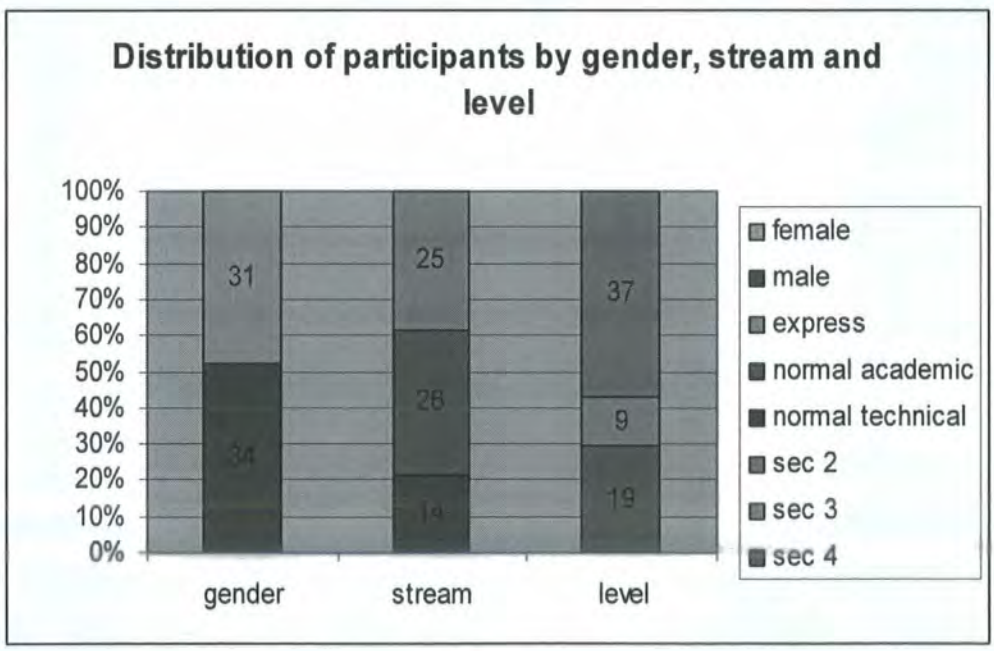
Thus, to ensure fairness and goodwill, the researcher used stratified random sampling method to get the students to participate in the programme. Eight students from each class of secondary two, three and four were selected randomly based on the class list, one every five names in the class list of 40 students. Foreign students were excluded because of the inclusion of the

National Education component, including those who have made arrangements to go for vacation with their families.

3.2.2 Demographic Profile of Camp Participants (Main study Sample group)

65 students were randomly selected from Secondary Two to Four to attend the camp (see Table 17). Participants were divided into groups consisting of students from different academic streams, levels, gender and race. The rationale was to ensure that students participated actively in all the general camp activities and in particular, the National Education component of sharing cultural practices related to the achievement-oriented values and universal moral values. Students of different levels and academic streams seldom come together to attend the same course. This camp therefore was a good platform to gauge students' interaction and engagement across level, stream, race and age — though this is not the main aim of this study

Table 5: Distribution of Participants by Gender, Stream and Level



The above diagram shows that there were more male than female participants. Numerically, the male students (n=34) comprised more than 50 per cent of the total number of participants. Majority of participants were from the Normal Academic stream (n=26), followed by the Express (n=25) and Normal Technical stream (n=14). More than half of the participants were from Secondary 2 (n=37) whilst 28 of the sample group were from the upper secondary level.

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3. 3 Instrumentation

3.3.1 Instruments of Quantitative Data

The pre and post-test used for the first pilot test held in 1999 were designed in a simplified way as compared to the one used for the main study in 2002 (refer to Appendix 6). Over the four years, continuous revisions were made to address some concerns, such as the problem of clarity of the items, as well as the usefulness and suitability of the items. The series of pilot studies became critical foundations for the main study because the researcher was able to improve on the quality of questionnaire that was later designed for the main study.

The quantitative research instrument used in this study comprised of a set of questionnaire which had six sections (see Table 5). The first section comprises questions on the personal particular of the students and other variables such as home computer ownership and internet access, parents' educational level and the type of housing they live – these reflect the socio-economic status of the participants. Though this was not the main aim of the study, the background information on characteristics of the sample was collected mainly for descriptive purpose that would help in drawing out the profile of the sample across stream and level.

The second section focuses on students' perceptions of their reading habits and English Language proficiency. The third section of the questionnaire measures students' perceptions of their moral literacy. The items in the fourth section examine students' perceptions of their understanding of the Singapore National Education concept and messages. The fifth measures students' perceptions of their technological literacy; and the final section comprises components on self literacy that focus on various aspects of life skills. The items in these sections of the questionnaire are cast in a five-point Likert scale.

For the last component, the rating system is used to measure students' perceptions of their reading skills, goal setting skills and other aspects of life skills. Students were instructed to rate how they feel/think of their very own life skills in the following order from the scale of.1 = NO SKILL (not at all proficient and would like to have assistance) to 7 = EXPERT (extremely proficient, no assistance required).

3.3.2 The Component of Quantitative Data

To summarise, the quantitative data from the pre and post tests by the respondents were used to capture the demographic and baseline information of the 65 participants who came from different academic streams with varied reading abilities, motivation and interests, classes, level, gender, ethnic group, age and academic streams

Table 6: Descriptive Information of Six Components of the Pre and Post Test Questionnaire

Subscale	No of items	Format	Scoring	Description of items	Sample item
Reading Habits	5	Likert scale	1-5 points	Measuring students' perception of their reading interest /habit	▪ Reading is a very important part of my life ▪ I will read only for school assignments and examinations
EL proficiency	4	Likert scale	1-5 points	Measuring students' perception of their EL proficiency	▪ I can speak and write good English without much difficulties ▪ I think I am more expressive and more competent in my mother Tongue than English
Personal values/ Moral literacy	5	Likert scale	1-5 points	Measuring students' perception of their personal moral values and attitudes	▪ I know how to develop positive attitude in me ▪ I believe that I have no control over my life
National Education	6	Likert scale	1-5 points	Measuring students' perception of their awareness and understanding of National Education messages	▪ I understand fully the concept of Total Defence as being taught formally and informally by my school ▪ I understand the 6 messages of NE
Computer Literacy	4	Likert scale	1-5 points	Measuring students' perception of their basic computer literacy	▪ I feel very confident using a computer for my presentations at school ▪ I am very proficient with all Window application software
Life skills	7	Rating scale	1-7 points	Measuring students' perception of their awareness of their very own life skills	▪ Computer skills (delete if not applicable, software, hardware,) ▪ Reading skills ▪ Communication skills

The items of the questionnaires are drawn and adapted from various sources, some of which are: *Students' Needs and Interest* survey (MRL Handbook, MOE, 1999, Annex 5-2D)[27]; MRL and English Language departments' survey forms conducted by PYSS as part of the annual appraisal; and self-designed survey to elicit students' perceptions on certain issues that needed to be addressed. Discussions with the HOD of EL, IT and PW were conducted for the purpose of refining the instruments. Though the researcher did not use any tools to measure

[27]The survey was originally adapted from Childress (1994).

the reliability and validity for the pre-test and post test used during the three pilot tests, she uses the SPSS programme for the main study.

To assess the validity and reliability of the instruments, three pilot studies were carried out. Items that were found as weak were either reworded or deleted. The revised version of the questionnaire was used for the main study (refer to the Appendix 6 for the sample of pre and post test survey). In addition, item analysis procedure – employing the item total correlation techniques — was carried for the actual study only for all the five components of the questionnaire. The results of the item analysis revealed that all the items registered as 'r' values are within the range of 0.3 to 0.7 and that the probability readings met the .05 confidence level.

3.3.3 The Components of Qualitative Data

The qualitative data obtained were to fill the gaps of a quantitative research and to provide rich information on participants' learning journey and experiences. Through structured conversations, interviews and observations, the researcher learned a great deal about the participants—their learning process, thoughts, feelings and behaviour.

Besides, the flexibility of qualitative research allows the researcher to make adaptations to the ever changing situations in the school (Grady, 1998). Such an approach provides the researcher with a more comprehensive and complete picture of the data collected by converging data analysis methods and offsetting strengths and weaknesses of each method.

The flexibility of the use of qualitative research allows the researcher to craft and utilise other data gathering tools found in qualitative studies such as structured learning log and reflective journal, students' portfolio, teacher's and trainers' journals and feedback pages, focussed group discussion with members of the learning circles, dialogues and interviews, students' project work, minutes of meeting and annual reports. Besides the project report, photographs were used to further substantiate the final analysis of the study. Multiple data would produce more credible results to the study as information that came from different sources and channels helped to provide clarity to the study, as well as authenticate and answer the research questions.

3.3.4 Focus Group Discussions (FGDs)

In this study, the researcher also resorted to FGDs of 10 small groups consisting of three to four students each to get their views and feedback on the upcoming

projects, and to brainstorm on the implementation of the project. The discussions held were stimulating and challenging. The groups provided a lot of information that otherwise might not be revealed in individual discussion or interviews. On an average, each FGD met three times throughout the four months duration of the project.

The researcher did encounter some challenges with some of the focus groups. Nonetheless, some groups were forthcoming especially when the participants were also members of the LCs. The latter volunteered their time and energy to see to the success of the project. They were able to express their views based on the list of questions that the researcher had prepared. Needless to say, the researcher had to control the situation when discussions got carried away due to excitement and over responsiveness. Details of each section of LCs will be presented in Chapter 4.

3.3.5 Documents Analysis

Besides observations, FGD and interviews, document analysis using students' learning log and reflective journal, portfolio, teacher's reflective journal and feedback pages, and students' project work were collated and used as part of the qualitative analysis in this study.

3.3.6 Teacher's and Trainers' Journals

The teacher-researcher and trainers also kept journals which included reflection on successes and limitations of lessons taught, ideas for improvement, interesting observations and other relevant thoughts. These reflections were recorded during lessons or immediately after the activities.

3.3.7 Students' Learning Log and Reflective Journal

Throughout the programme, students had to record their thoughts, feelings and perceptions of the programme in the structured Learning Log and Reflective Journal (see Appendix 8 for details of the Learning Log and Reflective Journal booklet). The log and journal are divided into different sub-headings for students to respond to at a particular time slots. All responses to the questions were then collated and analysed. Descriptive statistics were used and presented in this study by summarising participants' responses to the questions and analysing patterns observed.

3.3.8 Dialogues, Feedback and Interviews

Formal and informal dialogues; interviews with students, PSG members involved in iTopia and alumni members; and interviews between students and trainers were frequently conducted to capture generative conversations that were critical to the development and implementation of the projects.

3.3.9 Tape and Video Recordings

Both video and audio recordings were used to capture group discussions, interviews, project works done by participants and the STAR camp. These served as another tool for triangulation. However, one of the disadvantages of using recording tools was that most of the activities were recorded by amateur students. Thus, the quality of recordings was not good. The students recorded what they wanted to record instead of capturing the critical parts of the events as instructed by the researcher.

3.3.10 Ephemeral Artefacts

Work produced using flip charts and *mahjong* paper during the hands-on sessions throughout the camp served dual functions: as evidence of work done by students for evaluation; and as exhibits displayed during the two-day school open house.

3.3.11 Students' Project Work

Project works done by students throughout the programme represented a substantial body of evidence which were analysed to generate insights about students' learning. It is important to highlight here that reading and teaching materials alone do not constitute a critical educational intervention; but what teachers and students do with them that count. This research attempts to understand what was 'gained' by participants of the STAR Project as well as the problems and difficulties that they encountered.

In order to assess those issues, it is necessary to study the responses of not just the students, but teacher, trainers and those who were directly involved in the study. The responses were collated and examined for evidence of effects or influence (or otherwise) that the materials and all the processes had on the experiences, practices and learning of students and teacher. Research data which was based on students' perceptions was collected by means of two sets of questionnaire (pre and post test). The first was the pre STAR project (alternative reading programme) questionnaire and the second was the post-programme survey. The responses and results of two of the questionnaires were compared to gauge if there was any effective learning taking place.

3.3.12 iTopia Participants' Evaluation Feedback (used for the main study)

All the delegates (local and foreign) who were mostly educationist were given ***I Reflection*** evaluation feedback with regards to the whole presentation of the Open House, especially on the implementation of the STAR E-learning portal, STAR Website and STAR exhibitions. The feedbacks were collated for the aim of this study too.

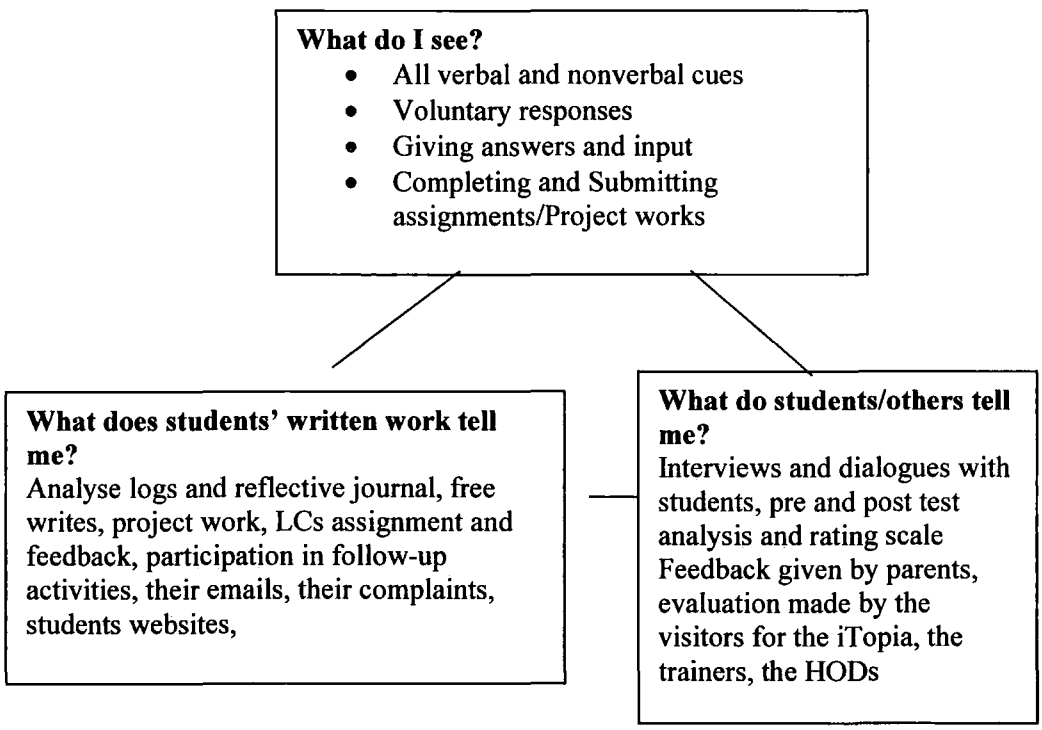
3.4. Data Collection Procedure and Analysis

The processes of data collection procedure and analysis—combining both qualitative and quantitative data—were an ongoing process. Student's pre and post tests were personally administered in both the pilot tests and main study. The researcher recorded her observations based on students' responses, interaction, and feedback in her structured personal journal (see Figure 5).

She did cross referencing and counterchecking on the data collected from the quantitative studies and feedback obtained from other multiple sources of qualitative approach, for example, trainers' responses, feedback from volunteers, students' reflective journals, focus group discussion and LC groupings and finally students' assignments and portfolios. These evidences allowed the researcher to analyse the processes of students' learning outcomes for specific area of interest, their cognitive processes as well as the general or typical outcome.

For the numerical data analysis, all data collected were from the pre and post test. They were later converted to simple descriptive statistics using Microsoft Excel, and Statistical Package for Social Sciences (SPSS) version 9 and finally are presented mostly as descriptive statistics with very minimum use of inferential statistics.

Figure 5: Example of an Observation Chart

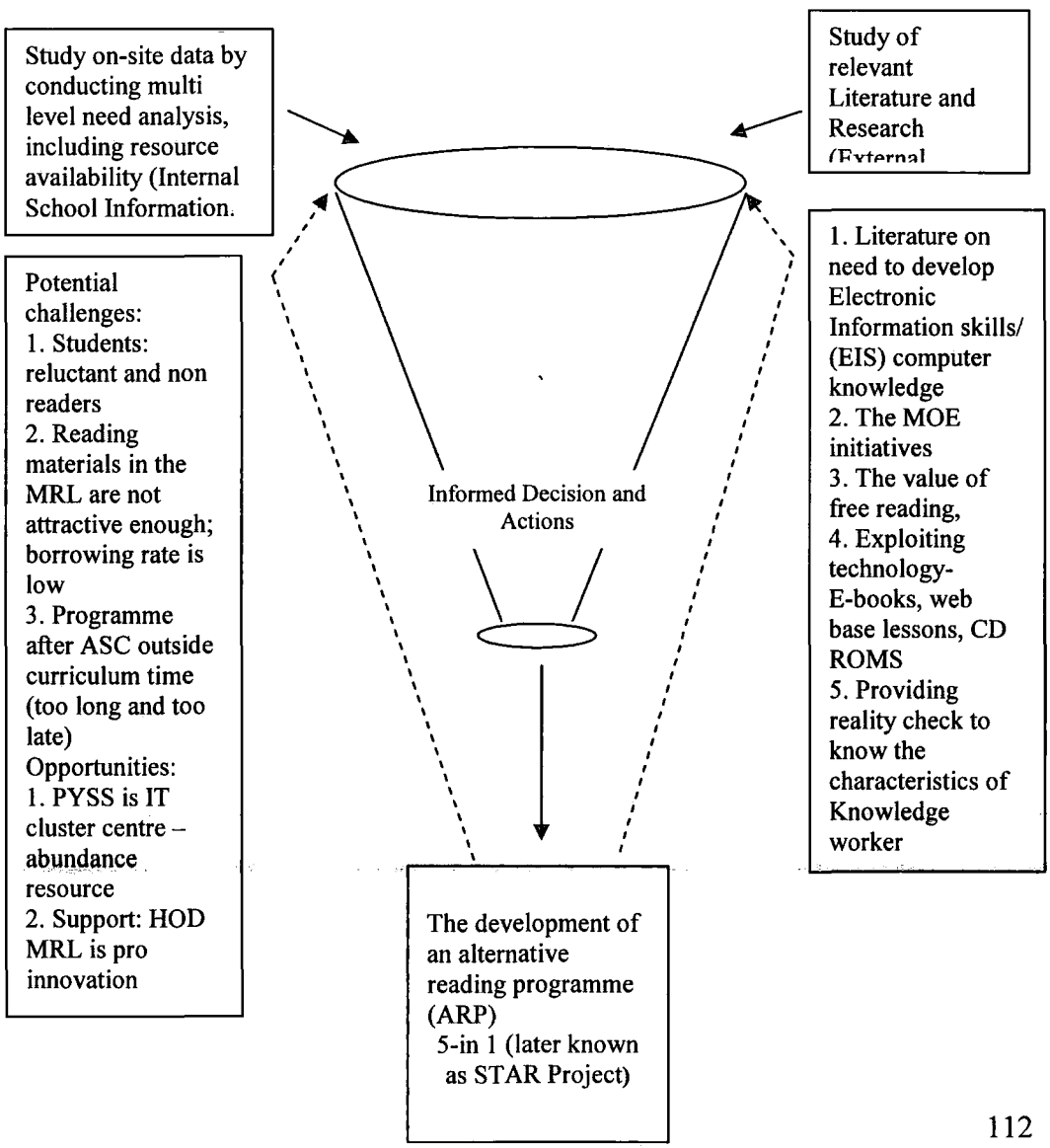


Throughout the four-year period, there were constant revisions made on the measurement items as well as the teaching and learning materials based on continual analysis of data received. All dialogues and interviews with students, teachers, alumni members and PSG, were summarised and presented in this and in the following chapter.

3.5 Application of AR in the Study in Stage 1

In the initial stages, the researcher adopted and adapted Calhoun's (1994) action research funnel in collecting data before any informed decision and action took place. Graphically, the process is illustrated in Figure 6 below. Using the AR funnel as a guide, the researcher proceeded with the fact-finding journey with the intention of formulating an alternative reading programme. The first phase of action research involves the collection of data intake before any informed decision and action were made. After the initial fact finding process, the researcher proceeded to apply and adapt the spiral cycle of action research in planning, implementing, observing, analysing, and assessing the STAR project.

Figure 6: Action Research Funnel: Mixing Internal and External Information to Design the New Reading Programme



3.5.1 Setting Context: Waves of Change in 1999

The year 1999 was a turning point for both the researcher and the school.[28] There was a leadership renewal, followed by changes in the administration and operation of the school: official curriculum time was extended from 1:50 P.M. to 2:30 P.M.; compulsory After School Care (ASC) programme (everyday from 3:00 P.M. to 4:00 P.M.) for the graduating classes (secondary four and five) was implemented to prepare them for the G.C.E. "O' level examination. These changes would inadvertently affect the students' after-school reading programme.

3.5.2 Professional Initiative

The researcher began her journey with the premise that she must be able to make a difference in her students' life. She had no hidden agenda in carrying out an innovative programme because she did not belong to any innovation establishment.[29] As a classroom teacher, the researcher felt that it was necessary to carry out meaningful changes that benefit both her students and herself. She was also interested in improving her own knowledge and skills in IT. The research on and implementation of the alternative technology-driven reading programme would allow her to keep abreast of the changes in IT. Concomitantly, she could learn from her students in a less threatening environment.[30] Before

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[28]The researcher was posted to the school in January 1999. In the previous year, PYSS was headed by a new principal. In 1999, new vice-principal was posted to PYSS. Internally, the school went through a lot of changes in administration, teaching staffs and learning process.

[29]The 'innovation establishment' (Fullan,1982) refers to the mass of firmly entrenched sponsors/disseminators–such as federal policy-makers, researchers, consultants, developers, project personnel of new programs and publishers–whom have vested interest in promoting educational changes.

[30]At that point of time, the researcher had not anticipated using the research as her doctoral dissertation. She had already laid out the foundation for a research topic entitled "History and Development of the Madrasah Education System in Singapore." But after being involved deeply in the reading project and when she saw the positive responses from students, the researcher decided to expand the study and the reading programme. In the second year of

embarking on any informed decision and action, the researcher did a fact-finding mission since she was a new staff with a new assignment in a new environment.

3.5.3 ESSS and WITs as Supplementary to Action Research

At that time, improvement tools such as the Electronic Staff Suggestion Scheme (ESSS) and WITs were commonly engaged by civil servants to make suggestions that could optimise organisational resources. The researcher was appointed by the HOD MRL as the WITs leader[31] for a project to look into the issue of low borrowing of library materials among students. The analysis of problems was done using the fish bone diagram[32].

The project, named FLASH,[33] was presented in the in-house convention and the Singapore Quality Control Convention in 2000. However, in order to carry out an in depth research on the subject and to introduce innovative changes to the existing reading programme, the researcher had chosen not to use WITs as a research tool. Structurally, WITs is rather rigid because within the team there has to be a leader, a facilitator and several team members. Furthermore, analysis of problems in WITs must be done using the fish bone diagram which is linear in nature.

The researcher also did not want to impose added load on her fellow colleagues. She started the study by using the ESSS platform to make a suggestion to

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implementing the project, the researcher sought the approval of her immediate superior—the HOD of IT—to submit the research for my doctoral programme. The researcher received the approval and endorsements from the school's Principal and Vice-principal.

[31] See Appendix 2 for a WIT report.

[32] The detailed diagram is provided in Appendix 3. The 'fish bone' diagram is used to analyse the problem of low borrowing rate of library resources.

[33] See footnote 22 in Chapter 2. Also, see Appendix 3.

improve the school's reading programme. Then, she looked into its innovation through action research because the latter allows her to explore deeper into the issue of reading and its relationship with basic and other forms of complex literacy.

3.5.4 Informal survey

Through daily observations, and series of formal and informal interviews with other teacher-librarians, HOD MRL and IT, HOD EL and students, the researcher managed to get an overview of the reading practices of students in PYSS. She also received feedback from the upper secondary students who were not involved in the reading programme conducted by the MRL department and the perceptions of the lower secondary students who had participated in the existing reading programme.

The researcher also looked at the available resources in the MRL. Her search revealed that the library did not have many captivating titles to attract the interests of reluctant and non-readers. With the support and reading materials given by the HOD MRL and IT, she embarked on the first level of action research where fact-finding is conducted with the intention of coming up with an alternative reading programme.

3.5.5 An Overview of PYSS Reading Programmes

Reading has always been a very important activity in PYSS. The school conducts three types of reading programmes namely: the Sustained Silent Reading, Extensive Reading and Information Literacy Programme and MRL supplementary reading enrichment programme. Basically, the principles and aims of these three programmes are almost similar: to promote good reading

habits and positive reading culture among students; and to provide opportunities to discover the pleasure of reading.

3.5.6 Sustained Silent Reading

The Sustained Silent Reading (SSR) or also known as Uninterrupted Silent Reading Programme (USSR) is conducted every morning for about 20 minutes, five days a week. Reading materials in the English language are read during the first three days of the week, while reading materials in the mother-tongue (Chinese, Malay or Tamil) language are read on Thursdays and Fridays. The main aim of USSR is to promote the culture of reading among students and to develop in them a life-long love for reading and learning. Students read local newspapers, such as *The Straits Times*, subscribed by the school for them using the government-endowed Edusave fund.[34] Students from the upper secondary classes subscribed to *Readers' Digest*; *National Geographic* or other commercially produced educational materials that are deemed suitable for them. After reading these materials, students are given some written assignments or worksheets to enable teachers to monitor the amount of reading done by students.

In principle, the USSR was considered a good programme. However, in reality, the school encountered problems in implementing the scheme. The time allotted for the USSR programme coincided with the morning assembly, and thus students' readings were always 'interrupted' by announcements made during the morning assembly. Other times, students that faced disciplinary actions were punished during the allotted time. Some students also did not bring their reading materials; or when they do, they did not read them. The USSR was not

[34]See, footnote 12 in Chapter 1.

monitored closely by teachers and the SMC members. Many language teachers, including the researcher, were quite critical of the USSR programme because there was a lack of proper tools and systematic way of monitoring the effectiveness of this programme.

3.5.7 Extensive Reading and Information Literacy (ERIL) Programme

Besides the USSR programme, the school implemented the Extensive Reading and Information Literacy (ERIL) programme which was initiated by the Ministry of Education in 1997. Under the ERIL programme, one period a week within curriculum time is specifically allocated for the teaching of extensive reading, information and literacy skills. Teachers are encouraged to bring students to the library during the allocated time slot. Students read either English novels of suitable standard or *Readers' Digest*. Reading of textbooks or other reference materials are strictly prohibited. Each student is expected to read about 15 books a year. Students record the titles of books, the dates of commencement and end of reading in individual reading record. Marks are awarded for participation in the ERIL programme. The marks allocated formed five per cent of the 15 per cent of the total continuous assessment[35] grades per semester.

3.5.8 Reading Enrichment under MRL

On top of the two reading programmes mentioned above, the MRL under the purview of the HOD IT/MRL organises supplementary reading sessions in English and Mother Tongue languages as part of the library promotional activities by library teachers. It aims to complement the school's effort to improve students' language proficiency with the ultimate objective of improving

[35]The formal examination in Singapore consists of two continual assessments (CAs)—one in Term 1 and another in Term 3; and two semestral assessments (SAs)—one in Term 2 (mid-year examination) and another in Term 4 (end-of-year examination).

their overall academic performance. Each student is required to attend two hours of reading programme per semester or four school hours throughout the academic year. However this supplementary reading programme only involved students from secondary one, two and three Express and Normal Academic streams. The Normal Technical stream students and the graduating classes (students in secondary four and five) were excluded from the reading enrichment programme.

It is relatively easy and manageable for teachers to organise and conduct enrichment programmes as many of the lower secondary students are not expected to attend compulsory remedial or extra lessons after school. Parents are informed of students' enrichment programmes.

Students are scheduled to the library for two hours per semester. The shorter time frame is to ensure that the reading programme would not burden students. Only 20 students are to attend each reading session. They are introduced to works written by local writers. Teachers will select required books and display them on the table. The reading programme begins with basic introduction and information about the authors. In order to engage those students, teachers either asked them to jot down interesting phrases that they come across while reading those books on worksheets or complete some other mini assignments. At the end of the two-hour session, students are allowed to continue reading assigned books or borrow other books from any genre.

After reading selected books for about two weeks, students do either a book review or a summary of the book. Upon submission to the teacher-librarian, students could include the titles in their class-reading file. As an added incentive,

all students in the Express and Normal academic stream are given the choice to list the titles of book reviewed as part of the English reading assignment for their Continual Assessment.

Prior to 1999, the reading programme organised by the MRL was an enrichment activity conducted outside the curriculum time by the Library teacher. In 1998, the school curriculum time ended at 1:50 P.M. Thus, enrichment programmes were conducted from 2:30 P.M. to 4:30 P.M. Students from the graduating classes were not involved in these enrichment programmes because they had to attend remedial classes.

3.5.9 Library Teachers' Concern

Since the researcher was assigned to promote reading as part of her CCA, she began to scrutinise the reading programme under the MRL. Her informal interview with the IT HOD and two teacher librarians[36] took place in the second week of 1999. The interview was conducted with three main aims: first, to find out the procedure of carrying out the reading programme under the existing system; second, to get some feedback pertaining to students' responses to the current reading programme; and third, to ascertain teachers' perceptions of the programme's effectiveness.[37]

Both teachers claimed that it was easy to conduct the reading programme because all activities are structured; they merely had to 'repeat' the process for different groups of students that attended the programme. They also found the

[36]Mrs Teo is the library teacher-in-charge of the Secondary One and Three students while Mrs Chia conducts the reading programme for the Secondary Three students.

[37]The questions asked were: "How the MRL reading programme is carried out and what the procedure is like? How responsive are the students and how would you rate the effectiveness of the reading programme in terms of students' interest and participation?

preparation work manageable and experienced less hassle if they booked the library beforehand for their respective slots. The one problem that they encountered was when some students were unwilling to attend the compulsory reading programme or were reluctant to do their book review or summary within the two-week time frame.

However the teachers noticed that the lower secondary students—being new entrants to the school—did not give many problems in terms of attendance, discipline in the library, and participation during the reading activity and submission of assignment compared to the upper secondary students. Based on the feedback which the researcher obtained from the two teachers, she concluded that the programme seemed to run well merely in terms of students' (compulsory) attendance. The HOD found it easier to monitor the programme by looking at the programme weekly schedule to determine that both teachers had fulfilled their CCA requirements. However, there was no effective and systematic evaluation of the overall programme.

3.5.10 Students' Concern

Informal interviews with students were conducted around the same time as the interview with teachers. Informal interviews or dialogue sessions were conducted with the following aims: first, to detect students' perception of the programme in terms of its usefulness and timing; second, how the reading programme benefits them; and third, are there any changes they would like to see in the reading programme.[38] Many students claimed that the reading programme was "rather boring". They had no choice but to attend the compulsory sessions;

[38]The students were asked the following: Is the weekly reading programme conducted by the library teacher useful? What did you consider to be useful? Is the timing suitable? What other changes you would like to see or propose? If you were a library teacher and was given the responsibility to conduct such programme, how would you organise one your students?

or faced detention. They also admitted that they either copied the summary found on the back page of the books read or from friends who had completed the book review assignment. These feedbacks were consistent with comments made by teachers. The latter moaned that the lower secondary students' book reviews were not as substantial as the upper secondary students who were more vocal, expressive and opinionated.

3.5.11Conducting Multi-Level Need Analysis

Nonetheless, before carrying out the first duty in the second week of Term 1 in 1999, the researcher had foreseen potential challenges in promoting reading among the graduating class based on her preliminary findings. The findings showed that:

1. Most of the graduating students were reluctant readers; they suffered from *aliteracy* problem—they could read but chose not to want to read. Students from the Express stream read only textbooks or the 10-year series compilation of examination questions. Normal Academic students were generally not too keen to read. Even among those who read, the genre is too limiting. As such, many read the local version of ghost stories such as *Singapore Ghost Stories* by Russell Lee.
2. The reading programme organised by the MRL was done outside curriculum time. Thus, graduating students would have to stay longer in school from between 4:00 P.M. to 6:00 P.M. That factor alone posed a great challenge because most students were unwilling to attend enrichment programmes as they were too tired after attending lessons throughout the day. Timing is critical because proper timing is essential to ensure the success of any programme.

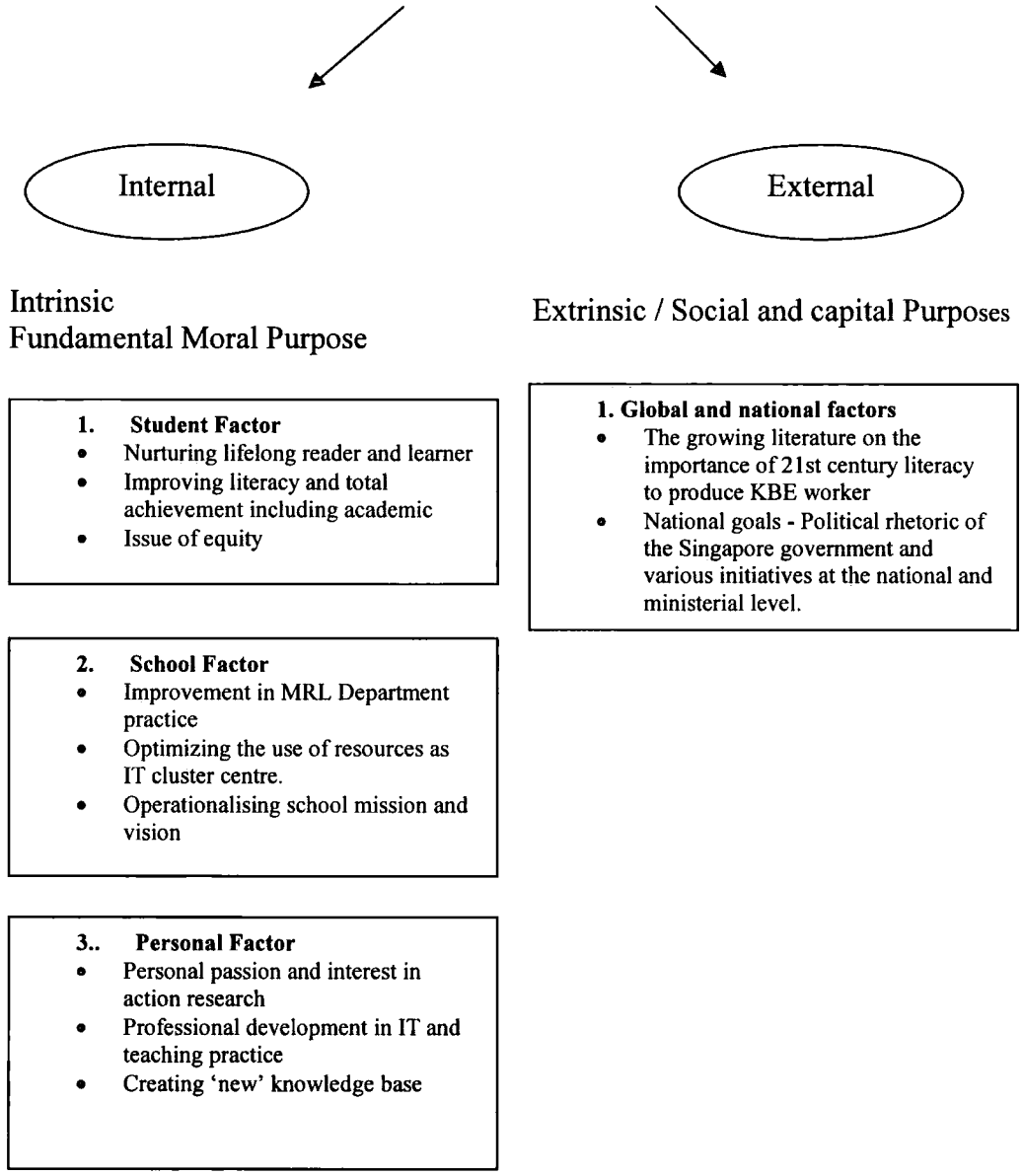
3. Print materials in the library are not attractive and interesting enough to draw students' interests.
4. The follow-up assignment given by teacher librarian was simply boring where students were given the task to complete the book that they had chosen to read and submit the book review later the week.
5. In addition, the aims of the MRL reading programme were not explicitly aligned with the school's mission and vision.[39]

Upon careful examination of facts, concerns and perceptions presented by both teachers and students, the researcher decided to embark on an Alternative Reading Programme (ARP) where students would enjoy going to the library — to read print-based books or online screen-based resources such as CD-ROMs, Internet, E-books/newspapers; or to log-on the computers to read personal emails or chat with their friends. The rationale for implementing the alternative reading programme can be graphically illustrated in Figure 7.

In conceptualising the alternative reading programme, the researcher had to look at students' profile and interests, resource availability and technical support, the school's aims and mission statement, national initiatives, and her own personal need and interest. These baseline data and information provided useful simple mechanism of 'tracking' the behavioural or attitudinal change in both the researcher and the students.

[39]The school's mission and vision are as follows:
Philosophy: ***All Ping Yians Can learn, achieve and contribute.***
Vision: ***Caring and Thinking Life-long learners.***
Mission: *To **provide** Ping Yians with **opportunities** to realize their **potentials** and nurture them into **responsible and caring individuals, and thinking lifelong learners.***

Figure 7: Rationale in Initiating the Alternative Reading Programme (ARP)



3.5.12. From Teacher Action Research to Collaborative Action Research

Initially, the researcher worked as an individual in implementing the changes in the reading programme with technical help from the school library and IT technicians. However, she realised that one of the effective ways of promoting the alternative reading enrichment programme was not to carry out an individual teacher based action research but to collaborate with students—especially upper secondary students and media prefects—because they are the recipient of the programme. A collaborative action research (which took place in its true essence

in year four of this study) between the teacher and students would be beneficial to both. She roped in a group of upper secondary students and media prefects to assist her in evaluating several CD-ROMs and other relevant websites for their relevance and usefulness in motivating the reading interests of fellow students.

During that critical stage of planning, teaching and learning had been never been more meaningful and pleasurable. The students had willingly offered their technical expertise so that the researcher could fine-tune the reading programme. Though some of her students were not totally adept in computer technology, they willingly struggled to complete all tasks. Their participation and feedback allowed the researcher to tailor a programme that would capture students' interests and nurture creativity. The 'informal' collaboration was the start of a gradual but meaningful research journey for both students and teacher-researcher.

3.5.13 Extension of Collaboration with Students through 'Informal Negotiated Curriculum'

The 'loose' partnership with the various stakeholders led to a formal collaboration in the months ahead. On hindsight, the study began on a firm foundation when the researcher decided to consult and collaborate with her supervisor, principal and students. She always believes that there must be strong partnership in teaching and learning so that all stakeholders derive a win-win situation. Formal extensive collaboration began in 2002 when the researcher extended the participants to include parents, teachers and educational trainers from within and outside school for the main study. Their support and expertise were crucial in showcasing the reading programme during the national event iTopia (discussed in Chapter Four).

3.5.14 Researcher's Dilemma: To Conform or Reform

Initially, the students were not used to the idea of being consulted with regards to the reading project. The immediate response to questions asked was: "I don't know". Possibly, consultation between teachers and students was not the 'culture' of the school. Some students suggested that the researcher should conduct a programme on current affairs; or not to limit reading to specific theme but to allow students to "leave it open"—read anything that they want to read. The difficulties of such 'open reading' lies in monitoring the effectiveness and benefits of the programme since students are free to engage in any random reading activities.

Consulted students could not come to a consensus as to what to read and how to conduct the reading programme. The researcher was in a dilemma. On the one hand, she had to accommodate her students' needs and interests to ensure that they would not have to stay too late in the afternoon for the programme. On the other, she was expected to follow the library's norms and routine: 'Every library teacher is expected to choose a day for the reading programme; the library will be reserved for the purpose; and students are to follow the reading schedule'.

The easiest way was to conform to the normal practice of clocking a minimum of two hours per week for a CCA. This would mean that for one year, the researcher has to do a 30-week session with a total of 60 hours. Each student would attend only two hours of reading enrichment programme per semester. Conforming to the existing reading programme would also spare the researcher the trouble of designing, implementing and monitoring a new reading programme. She wanted a reading programme that would capture the interests of her students and to make it palatable so that both the students and the researcher

would not consider the programme as a "burden" or "just another school activity."

3.5.15 Presentation of Concept Paper to the SMC for Approval

After careful deliberations and endorsements from students on several reading materials and themes; preliminary feedback and input from teachers, students and HOD, constructions of various units of instructions were carried out. A concept paper was prepared and presented before the School Management Committee (SMC). The response given by SMC was critical because it changed the course of the pilot test. Originally, the pilot test was limited to selected secondary four and five students only.

However, the principal and other members felt that all students, especially those in Secondary One should be exposed to module 1 on *Attitude for Success*[40] because the school should invest in Secondary One students as they would be with the school for the next four to five years while the graduating class would be leaving the school in a few months time. Another pertinent issue raised was on language.

The principal was ambitious and suggested extending the online reading in English to include Mother Tongue (MT) languages. Since the researcher was only in charge of conducting reading enrichment programme in English, she could not impose her ideas on MT teacher-librarians. However, the Coordinator for the Malay Language, Ms Siti was very keen to replicate the study in Malay. Upon formal approval from the SMC, the researcher scheduled the implementation of the pilot study in the second term.

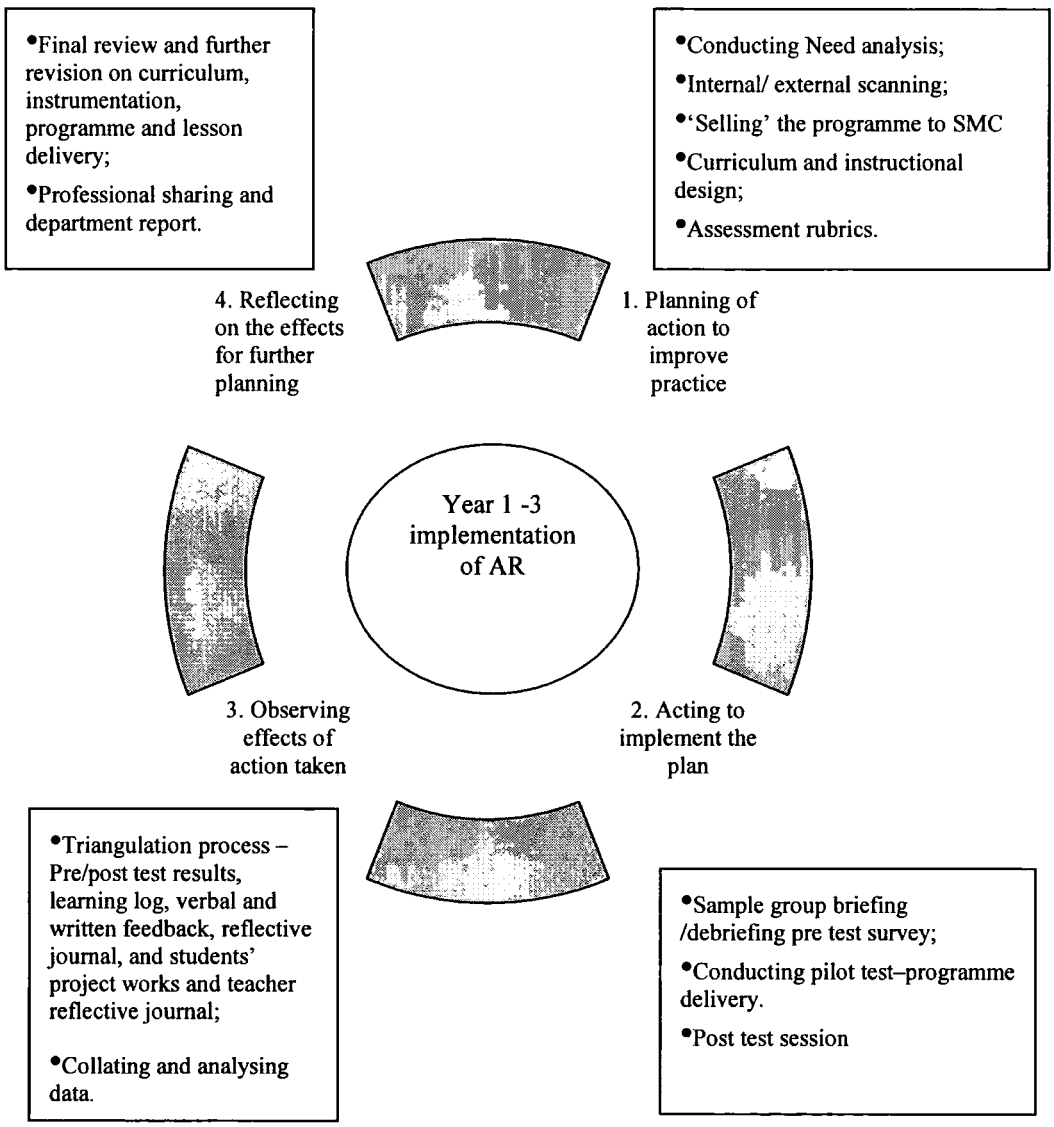
[40] The Module 1 Booklet on ***Attitude for Success*** is enclosed in Appendix 4.

3.5.16 Conceptualisation and Planning Process of the Alternative Reading Programme

The research design of this study (graphically represented earlier in Figure 6) incorporates the process of critical inquiry approach whereby reflections of all key players were captured, documented and analysed to derive patterns that could answer some of the concerns regarding reading interests and habits among PYSS students. It also reflected the researcher's attempt to link research and professional practice in areas such as technology integration, initiating innovation and reforms in schools.

As stated in the literature review on AR in Chapter Two, AR is cyclical in nature. Thus, constant updating of information and reviews are needed to obtain results. Figure 8 below, graphically represents the spiral nature of this study during the pilot tests carried out in the first three years

Figure 8: The Spiral Cycle of Action Research that serves as the Model during the Three years of pilot tests

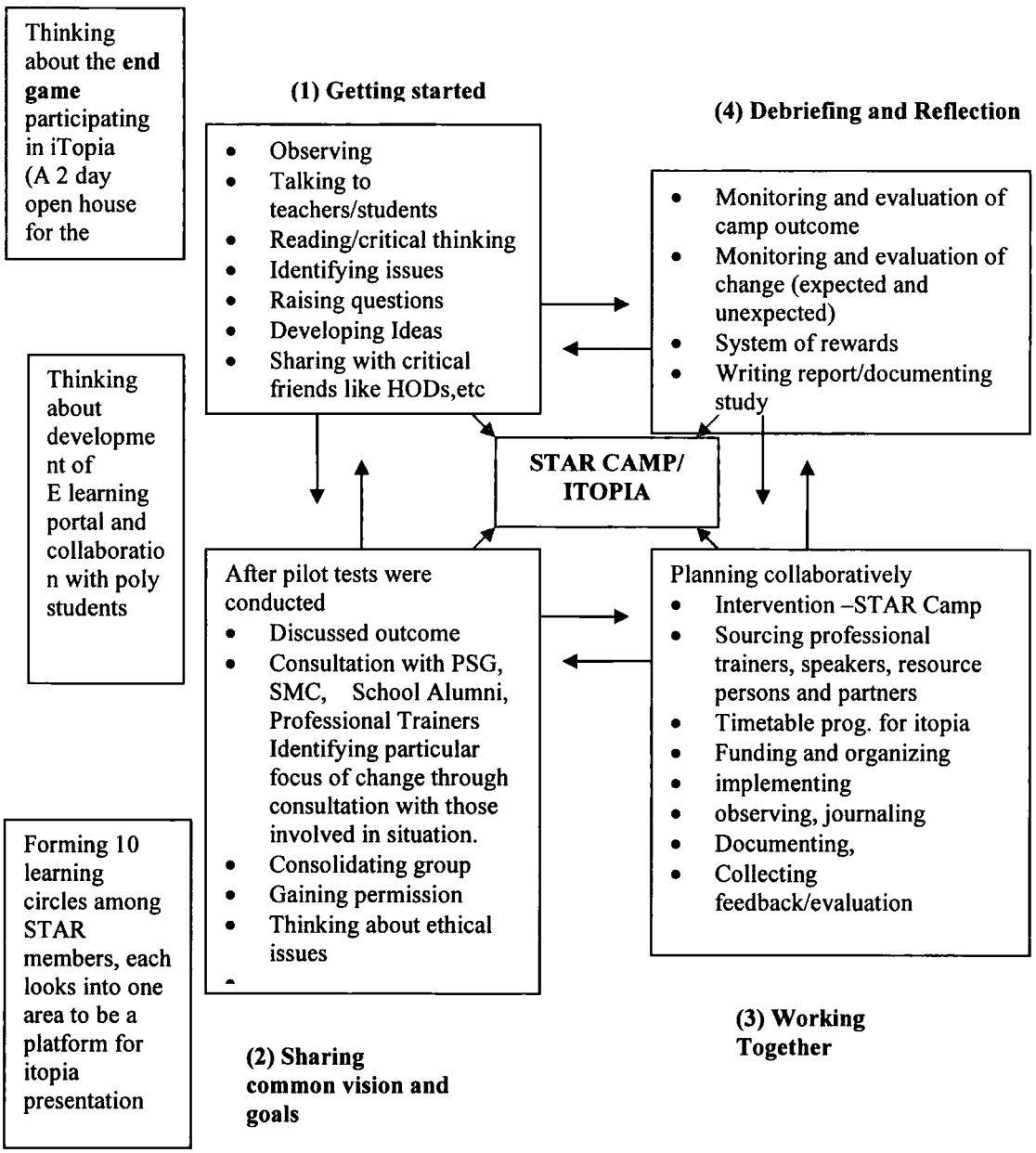


3.5.17 Collaborative Action Research Model

This study started as Teacher Action Research (TAR) and later in year four, it evolved into Collaborative Action Research (CAR) that involved not only the researcher and students, but also the non teaching staff (who provided all the technical support), the HODs of English, Pupils Welfare and IT, other professionals (co-trainers and critical friends) and the PSG members. As the study progressed, former PYSS students helped to develop the E-learning Portal.

Figure 9 reflects the complex process of the collaborative action research as employed in year four of this study.

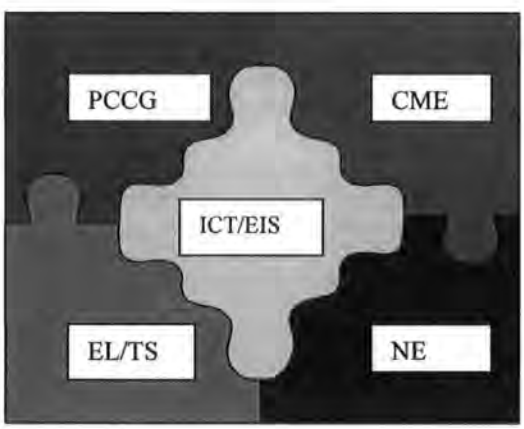
Figure 9: Collaborative Action Research Framework which was used in Main Study in Year Four.



3.5.18 Development of the Teaching and Learning Package: The Characteristics of *5-in-1* Reading Programme

The technology and resource-based interdisciplinary Action research programme (ARP) was originally known as ***5-in-1***. Figure 10 shows the simplicity of the original concept of the ARP which consists of the integration of five core subjects, namely: Pastoral Care and Career Guidance (PCCG), National Education (NE), English Language and Thinking Skills (EL/TS), Civics and Moral Education (CME) and Information Communication Technology and Electronic Information Skills (ICT/EIS). The ICT/EIS component is central to the programme because the ability to draw information from modern computer technology allows students to expand the knowledge horizon.

Figure 10: Simple Graphical Representation of the *5-in-1* Concept



After conducting the pilot test, the programme was refined and the project took on the name **STAR** (Striving for Total Achievement and Responsibility)[41] project in which the five areas of discipline are weaved and integrated to represent five core areas of literacies (see Figure 11).

[41]The change involved the work and input from students. Their valuable collaboration and contribution resulted in generating all graphic works and illustration needed for the project.

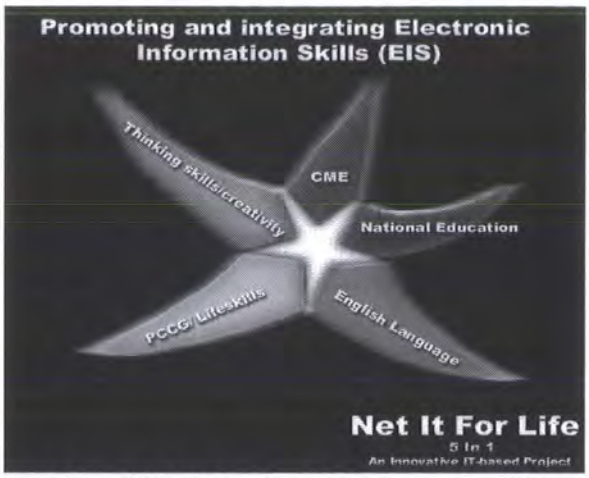


Figure 11: STAR Project (the Improved Version)

3.5.19 Resources Used

For the content on Life skills, an interactive personal development CD-ROM entitled ***Attitude for Success*** (see Figure 12) was used as the main resource. It is part of a series of commercially produced CD-ROMs on ***Life skills and Personal Development and Productivity Programmes*** bought by the school library. The series contains five central themes, namely ***Attitude for Success, Organised for Success, Time Management, Stress Management*** and ***Effective Communication***.[42] Each module is accompanied by a specially designed booklet[43] or task sheet. Hyperlinks to relevant websites were created to make the skills of technology integration more explicit. Suitable titles of the book relevant to the theme of personal POWER were made available in four languages for students to borrow from the library.

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[42]The series were selected based on standard review and evaluation made by a core group of upper secondary students and media prefects. They found the series useful and interesting. See Appendix 5 for cover pages of the series.

[43]See Appendix 4 for the sample booklet. Only the booklet on ***Attitude for Success was*** used. The remaining booklets for other modules were not included because they were not used in the study due to the limitation of the study.

Figure 12: Cover page of CD-ROM titled *Attitude for success*

3.5.20 Reasons for using the CD-Rom[44]

This particular CD-Rom was selected because it coincided with the aims of the STAR Project as listed below:

1. Developing positive winning attitude is appropriate for many of the participants who lacked positive attitude in reading as well as school life.
2. Reading print and screen-based materials on personal developments that are related to the concept of POWER require the use of computer to seek information, do e-research and explore web based learning. Thus, basic English Language literacy, self literacy and computer literacy are simultaneously covered with the use of these materials.

In addition to the CD-ROM series, other inspirational and motivational video tapes, audiotapes and books by Anthony Robbins, Zig Ziglar, Deepak Chopra, Stephen Covey and Oprah Winfrey were used as follow up activities of the

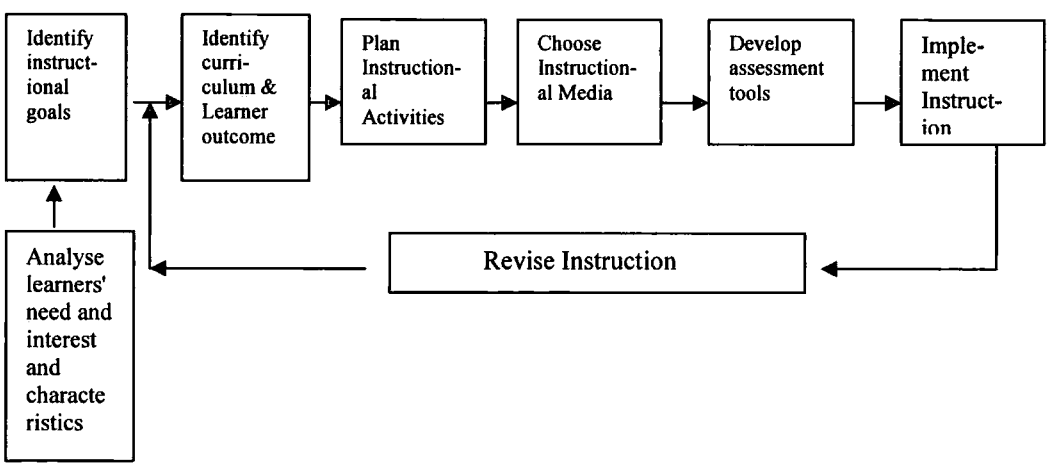
[44]As advised by the researcher supervisor, an attempt was made to obtain the professional review on these CD-ROMs from the producer; but the researcher could not obtain them despite making online contact with the producer.

STAR project. During the implementation of the reading project, students used software such as ***Kick Start Project Management, Flash, Macromedia, Mindmap Inspiration*** and ***Newsprint, Microsoft Publisher*** to produce artefacts and other forms of project work. Some of these materials were available in the PYSS MRL, and some were borrowed from the Teachers' Network and National Library Board.

3.5.21 A Systematic Instructional Planning

The scope and coverage of the reading programme required proper planning for effective instruction and implementation. Figure 13 shows the graphic representation of the systematic instructional planning. The different aims of the programme had to be achieved through meticulous planning and clarity of aims which were critical during the implementation of the pilot tests.

Figure 13: A Systematic Instructional Planning



Source: Adapted from Raiser and Dick (1996) as cited in Angela F.L. Wong, "Instructional Planning," in Michael D. Williams, *Integrating Technology into Teaching and Learning* (1999:10)

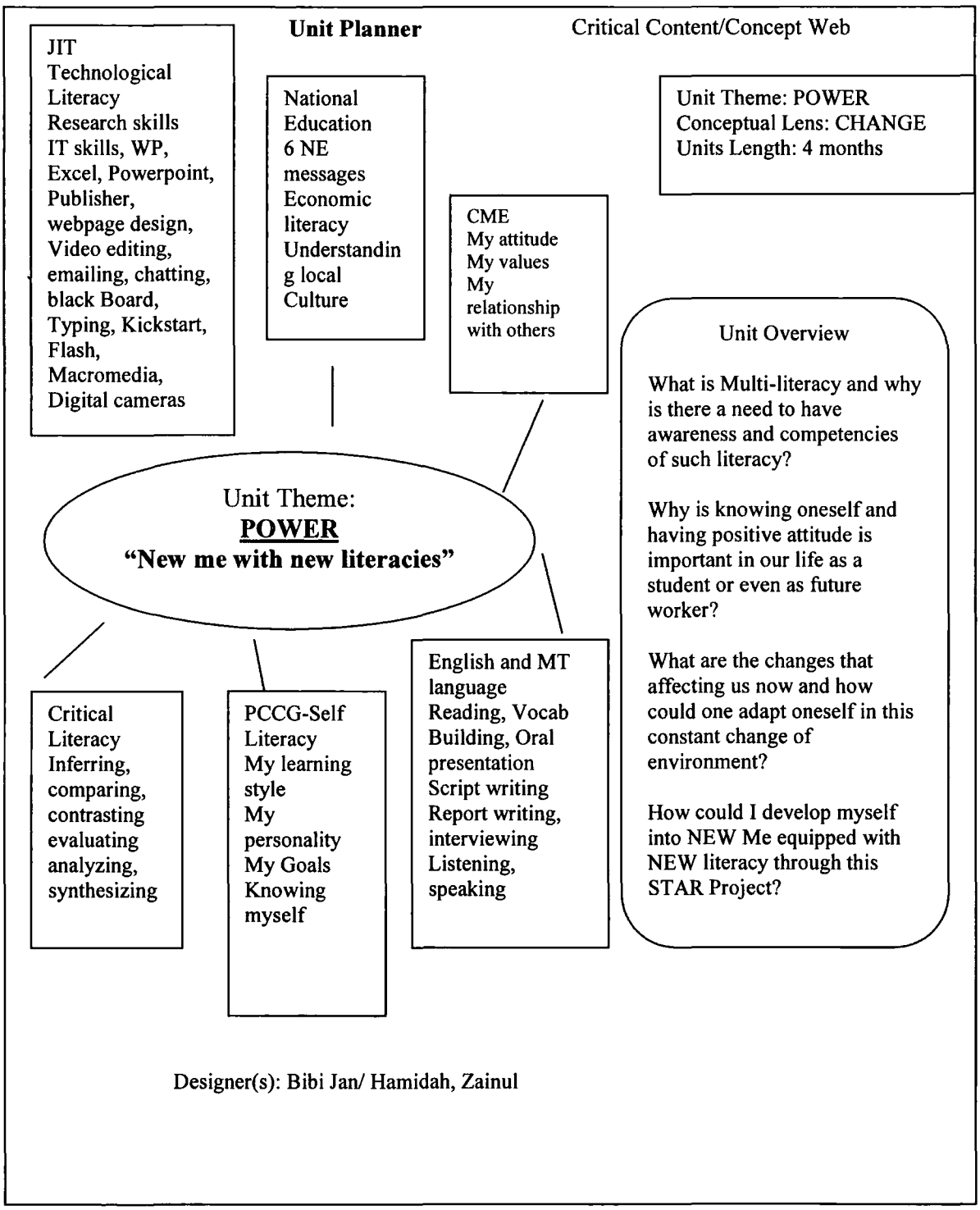
The core concern of the planning process (in terms of instructional activities, content, materials, media, curriculum format, assessment and evaluation) was to achieve the aims of ***5-in-1*** which are: to entice students to read as the main goal and acquisition of other skills, knowledge and right attitude as sub-aims.

In planning the alternative reading programme, the researcher had adopted the instructional planning model proposed by Raiser and Dick (1996). For the content structure, the Concept-Based Integrated Curriculum proposed by Erickson (2001) was used.

3.5.22 Lesson Plan

When the programme was first implemented in 1999, the researcher had used a simple, conventional lesson plan format (refer to Appendix 9). However, the main study adopts a new format based on Erikson's (2001) Concept-Based Integrated curriculum. Details of the concept-based unit planner of the STAR reading project is represented in the content web below (see figure 14).

Figure 14: Content Webs for the STAR Project



3.6 Project Implementation and Review through Pilot Tests

Three pilot tests were conducted to three different cohorts of pupils in three different years from 1999 to 2001. The details of each pilot test are provided below.

3.6.1 Pilot Test 1: Sampling

In 1999, 40 students (comprising both male and female students from the four ethnic groups) from different levels were involved in the programme (see Table 6). The decision to include Secondary One students came from the principal as he believed that any effort to change students' attitude and mindset should start at Secondary One. Being a new teacher in the school, the researcher had no choice but to adapt to his suggestion.

The ten 13-year old students from the Secondary One cohort were selected because the school management committee felt that they should be involved in the enrichment programme. The Secondary One students would be with the school for four to five more years and thus, would benefit from the programme. Ten Secondary two students were involved in the reading programme conducted in the Malay language because the school management had voiced strong interest in replicating the programme in the Mother Tongue language.

Ten students were selected from the Secondary Four Express stream and ten came from the Secondary Five Normal stream. These students were selected by their form teachers based on their perception on who would benefit from the pilot project. The first trial was implemented for a period of three weeks (15hours) during curriculum time after the mid-year examination as part of the post examination activities.

Table 7: Distribution of Students by Stream and Levels for Pilot Test 1 (1999)

Level	Express	Normal Academic	Sub-Total (n)	Remarks
Sec 1	5	5	10	
Sec 2	6	4	10	Replicated in Malay Language
Sec 4	10	-	10	
Sec 5	10		10	
Total	31	9	40	

3.6.2 The Second Pilot Test (2000)

The second pilot test took place in the year 2000. A new cohort of 45 students from Secondary Three was selected to undergo the programme. Table 7 shows the distribution of participants by stream. The target group shifted from the graduating class (Secondary Four and Five) to Secondary Three students because of the feedback given by students and the SMC members. Unlike the graduating students who were then busy preparing for preliminary and the G.C.E. 'O' and 'N' level examinations, Secondary Three students did not have to undergo compulsory after school care (ASC) programme and were deemed to have more 'free' time.

Table 8: Distribution of Students by Stream and Levels for Pilot Test 2 (2000)

Level	Express	Normal Academic	Normal technical	Total (n)	Remarks
Sec 3	15	20	15	45	Most of participants were researcher's students

3.6.3 The Third Pilot Test (2001)

The third pilot test, consisting of a group of 160 Secondary Three students, was done in the year 2001 (refer to Table 8 for distribution of students). The researcher was asked to extend the programme to a bigger group of students because the programme had benefited previous batches. However, due to her

heavy load and the high cost of the E-learning system to be developed by the professional vendors, the idea had to the shelved.

Table 9: Distribution of Students by Stream and Levels for Pilot Test 3 (2001)

Level	Express	Normal Academic	Normal technical	Total (n)	Remarks
Sec 3	40	80	40	160	Most of the classes were taught by the Researcher

3.6.4 Implementation and Outcome of First Pilot Test (1999)

Prior to the pre test survey, the researcher had briefed all participants regarding the initial ***5-in-1*** programme. It was followed by an 'intervention' lesson in the computer lab. While listening to the instructions, explanations and the CD-ROM, students entered all the necessary information in their task sheet. After listening and reading the CD ROM on ***Attitude***, participants had to complete an assignment which could be done at home.

Students were required to keep a Learning Log and Reflective Journal—a tool used to monitor and measure their learning outcome. Specific responses and processes were also captured through completed Task Sheets and group project work. All materials were kept in individual folder as part of students' portfolio assessment. Although assessments were not graded individually, students who had successfully completed the programme were given grades as part of the non-formal assessment for CME. As the number of students was rather small for the pilot tests, responses given in the pre and post test were manually tabulated and analysed to gauge the effectiveness of the programme.

3.6.5 Results for Pilot Tests: Strength of the Programme - Enhancement of Students' Learning Outcome

The students' learning outcome of the first pilot test was very encouraging as substantiated in the feedback, interview sessions and simple evaluations obtained from the first group of participants. Since most of the participants were chosen by their form teachers, the researcher did not encounter many problems in getting them to come regularly for the sessions. However, the selective sampling did pose a problem in research design. Since participants were not randomly selected, the researcher was not able to clearly conclude that the increase in reading was due to the effectiveness of the ***5-in-1*** programme.

Nevertheless, participants could walk out of the programme if they found the programme uninteresting as participation and attendance were not compulsory. Thus, since all participants completed the programme and assignments given, the researcher could conclude that they were motivated and stimulated by the programme. This was further supported in the feedback given after the programme.

Besides, the natural interest in or inclination towards computer, other possible reasons for students' continued participation in the programme were: the content of the programme which centred on the theme of POWER covers wide topics of personal development and empowerment; the fully air-conditioned computer laboratory; and access to the school laptop (participants could bring home the school laptop to complete their assignments if they do not own a PC at home).

Students were also attracted to the flexibility of the programme whereby they only had to stay in the school for a minimum of two to three hours for the initial

lesson. They were allowed to complete the remaining parts of the project—such as completion of worksheets, mini project work, verbal and written feedback—within or outside the school compound. They were encouraged to collaborate with their friends to do project work.

In addition, as an incentive, their readings could be counted as part of the requirement of the English department ERIL programme where students are required to read at least 15 books per year which constituted towards ten per cent of the Continual Assessment. However, the ***5-in-1*** programme established the requirement where participants had to read in order to pass the English Language paper.

The ten participants from Secondary One level had expressed their difficulty in understanding and completing their assignments to the researcher, but they also claimed that they enjoyed online reading. 30 of the participants (please refer to the profile of the sample group for pilot test 1) enjoyed online reading which was perceived as a "cool" activity. This was not a surprising fact because most participants belonged to the Net generation (Tapscot, 1999). They claimed that the ***5-in-1*** programme increased their awareness of the importance of reading, mastering basic computer skills and computer software application, and more importantly, having positive and winning attitude in life and the mindset to function effectively in a complex and competitive society.

The Upper Secondary (secondary four and five) students found the programme very useful and meaningful because they could relate to a lot of issues raised during lessons. The use of analogies and metaphors to understand the concept of

attitude appealed to them. After all, the entire curriculum was designed and crafted with the input of upper secondary pupils to meet their PCCG needs.

Participants from the Malay group showed positive interests. This was communicated to the researcher by the Malay Language coordinator after she had collected the feedback from students and collating the simple evaluation form administered to the ten students from Secondary Two. She obtained articles using a parallel concept of POWER in Malay language through *Cyberita*–online news of the Malay daily *Berita Harian.* She conducted her lessons using materials taken from the *Cyberita* because there was no Malay version of the CD-ROM series used by participants in the English language programme. The positive result of the Malay group was presented in one of the regional conferences held at the University of Songkla in Thailand in 1999.

3.6.6 Challenges Encountered

Some of the challenges encountered could be categorised as the followings:

1. **Timing:** The researcher found it very difficult to get the students to come in the afternoon after school for the reading programme partly because of the timings that clashed with other school events such as band and choir practices.
2. **Logistic:** Problems arose with the use of computer laboratory because priority was given to the graduating classes and other instructional programme based classes such as Design and Technology, Home Economics and Computer Application.
3. **Novelty:** In the early part of the study, students were attracted to the ***5-in-1*** project because they were allowed to surf the net, email to and chat with their friends, listen to music, play online games and stay in the air conditioned room with little supervision from the researcher. However,

as the novelty wore off, the researcher had to find new ways to sustain students' interests which could be time consuming.

3.3.7 A More Authentic Mode of Assessment and Evaluation

As a result of the implementation of the project, a series of assessment tools to assess the learning outcome of the participants were developed. Assessment of students' tasks sheets and project works – coupled with personal feedback written in the reflective pages – were used to measure students' responses, engagement and commitment to the programme. The assessments, in the form of a simple rubric for areas to be evaluated were used to measure the effectiveness of the project; NOT the academic performance of participants.

3.6.7 Benefits to Teacher and School

The implementation of the reading programme fostered greater collegiality and collaboration among teachers and other non-teaching staff. More importantly, the school-based action research allowed the researcher to sharpen her teaching skills and improve her librarianship, thus increasing her level of professionalism. Her basic IT knowledge increased tremendously partly due to the collaboration work with students to produce all IT-related teaching and learning materials.

3.6.8 Observations Made Between Existing and Alternative Reading Programme

Although there were initial minor disruptions, participants enjoyed attending the alternative reading programme (ARP). The pilot tests allowed the researcher to identify effective intervention strategies that could help increase students' reading and acquisition of other skills through the implementation of the ***5-in-1*** programme. Tables 9 and 10 list the summary of results of the three pilot tests.

Table 10: Summary of the Results of the Pilot Tests Conducted in 1999

Pilot Tests	Target grp/ Size (students)	Mode of Delivery	Key Collaborators	Significant findings (Strength)	Significant findings (Weaknesses)	Critical Reflections and Follow-up Actions/revisions	Area for Improvements
(1) 1999	Sec 1 – 10 Sec 2 – 10 Sec 4 – 10 Sec 5 – 10 Total = 40	During the post examination period in May	Teacher-Researcher, Students, HOD EL, HOD PW, Library Technician/IT, Technical Assistants	1. Students were engaged and showed keen interest in their work especially in collaborative IT-related project work; 2. Increase in reading as evidenced in the completion of assignments; 3. Sec 4 and 5 benefited more in both cognitive and affective aspects as compared to Sec 1 students; 4. Students enjoyed and learnt a lot from the programme even though they had to stay for longer hours; 5. Replication in Malay: findings are consistent with the EL version; though materials used were different, there was a common process	1. Timing was not good as it clashed with post examinations activities; 2. Sec 4 and 5 students were pressed for time because of on-going ASC programme and preparation for prelims and national examinations; 3. Not appropriate for Sec 1 students since curriculum and assignments were designed for the graduating class; 4. Lack of quality 'reflection' especially by students in the lower secondary levels; 5. Impacted only a small group of students (11 out of 20 upper sec students) 6. For the Malay group: the lower sec students enjoyed the session not so much because they liked the reading but the new approach to reading Malay prints, i.e. using the computer	1. No follow-up activity; 2. Lack of operational flexibility from management; 3. Lack of incentives: form teachers suggested that participants be rewarded for effort, e.g. CME grades, CIP clocking time, SKM tie-in, ERIL CA marks; **Professional Development** 4. Submitted project to HP/MOE national competition; 5. Presented paper at a regional conference in Thailand	1. Design a follow-up programme; 2. Shift of target group to Sec 3 students; 3. Managing time constraints; 4. Get management support to avoid clashes of activities; 5. Avoid getting Sec 1 students if no instructional change is made

Table 11: Summary of the Results of Pilot Tests Conducted from 2000-2001

Pilot Tests	Target group/size	Mode of Delivery	Key Collaborators	Significant findings (Strength)	Significant findings (Weaknesses)	Critical Reflections and Follow-up Activities/revisions	Area for Improvements
(2) 2000	Sec 3: 45 students Total = 45 students	Outside curriculum time; in the afternoon (used flexibility concept)	Key collaborators of Pilot 1; member of PSG Project Berjaya (Malay group)	1. No significant findings, except that the Sec 3 students could devote more time to the programme because they did not have to sit for national exams. 2. Increased in incidental learning through peer sharing and teaching, especially when students teach their peers on using computers and related software	1. Need to make amendments to the Sec 3's task sheet; 2. Tried out E-pre and post tests assessment, E-task sheet and E-journal to record students' learning with minimum teacher supervision but resulted in failure because the E-learning platform was not created	1. A lot of technical problems due to flexible system; 2. Submission of students' work in soft copies were affected by computer virus; **Professional Development** 3. Paper presented at the Teachers' Network Conference; 4. Presented project to four vendors to develop E-learning portal	1. Change mode of delivery; 2. Adopt more open and flexible learning concept; 3. Revise teaching and learning materials.
(3) 2001	Sec 3: 160 students Total= 160 students	Outside curriculum time; in the afternoon (used flexibility concept)	Key Collaborators of Pilot 1; and main PSG members	1. Students recognised the importance of acquiring new literacies; 2. Students attended the presentation of Anthony Robbins' preview when he came to Singapore in 2001.	1. Not able to conduct programme effectively due to the large size of sample; 2. Clashes of activities during the after school period; 3. Poor monitoring of students' journal/log; 4. Quality of work from the weaker stream students was not satisfactory.	1. Should not reacted to pressure from the top; 2. Proper planning before extending to bigger groups; 3. Lack of monitoring due to the large number of students; 4. Not possible to have only one teacher in charge.	1. Need a platform to showcase students' work to improve self esteem; 2. Work with PSG chairman.

There was heavy focussed on the use of technology at the initial stage of the programme. Later, the researcher realised the need to consider other factors and context that could help promote reading among her students. Technology per se is not the sole factor that could encourage students to read; other critical factors include, flexibility in the operation of the programme; 'no hassle and no pressure' concept (students could complete their project work during the school holidays); informal assessment; applying values learnt in class to real life situations (such as inviting working students to share their experiences in dealing with social and workplace competencies with their peers); negotiations and partnership with students; incentives and rewards; and linking of the reading programme to school requirements such as the Community Involvement Programme (students clocked in a minimum of six hours of involvement in the reading programme to help the disadvantage children as part of community services), CME non-formal assessment grade and Continual Assessment (ten per cent of the EL total assessment).

3.6.9 The First and the Subsequent Cycles of Action Research

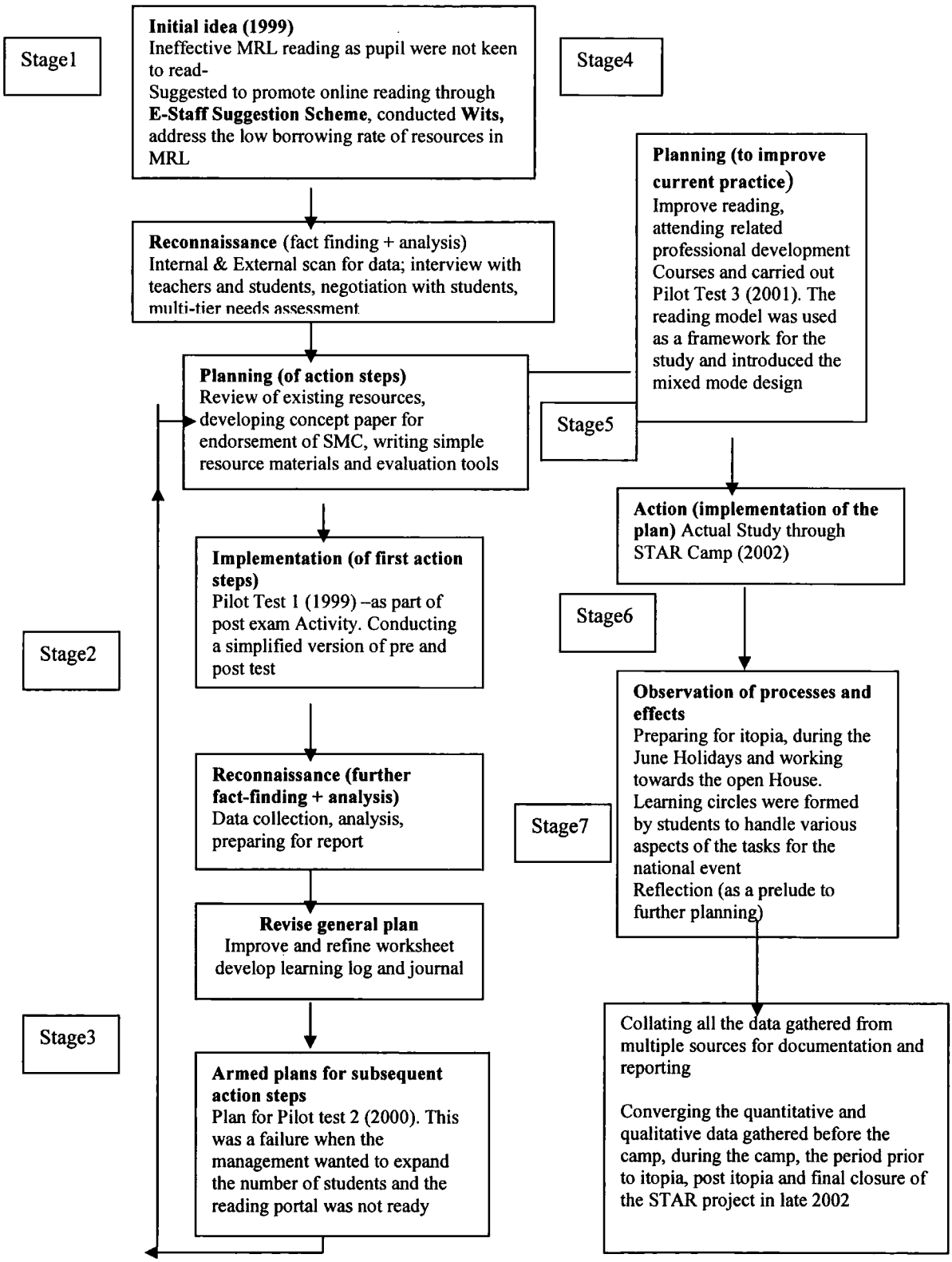
The researcher attempts to reflect the process of the first cycle of the action research through the summary presented in Table 11 below. Every task, reason and rationale for every action is also reflected in Table 11.

And to have a complete understanding of the cycle of action during the four years of research done from 1999 when it was first conceptualised and implemented as a pilot test to the actual study that was carried out in 2002 through the STAR CAMP, Figure 15 (in the following page) provides an illustration of the process.

Table 12: Summary of Actions Taken and Reflection done in the First Cycle of Action Research in 1999 using a Time Line Approach

Phase 1 of AR	Tasks	Reasons/Reflection
Jan to June 1999 Term 1to 3	1. Conducting observation; internal and external scanning; fact finding; reading; need analysis of the students, department, school and personal. 2. Carrying out joint-review of materials and resources with students to gauge their responses and feedback. 3. Drawing out the concept paper., with lesson plan, and lesson objectives. 4. Submitting to ESSS to introduce the Online Reading as part of improvement of Reading programme under MRL and conducting WITs to improve the rate of borrowing of the library materials 5. Presenting 5-in -1 to HOD and SMC for endorsement. 6. Designing a systematic Instructional Planning which includes a simple pre and post test survey, and custom-made hypermedia project materials. 7. Implementing and Facilitating (Pilot Test 1-1999). 8. Monitoring and Analysing Data. 9. Revisiting, Revising, and Reviewing. 10. Reporting and sharing First revision made to 5-in-1; changed to STAR and Preparing for submission of national IT competition organised jointly by MOE, Educational Technology Division and Hewlett Packard.	1. To identify problems, propose solution, analyse audience, personal capacity, aligning of school aims with students 2. To form partnership and develop ownership with students for maximum participation 3. To establish clarity of aims and proposed plan of action. for SMC approval 4. To 'test' out feasibility of programme and meet the quota of having four ESSS per year. 5. To get support and approval for departing from the norms. 6. To complement the instructional tool of the software and thus enhance students' learning. 7. To conduct the 'intervention' programme; and replicate in the Malay version. 8. To collate different forms of data for analysis 9. To study the impact and the level of 'value added ness' of 5-in-1 for revision 10. a) To submit term report for the MRL department; b) To present findings at the regional Conference at the Prince Songkhla University, Thailand.

Figure 15: The Flow Chart Showing the Different Stages of Action research throughout this study (1999-2002)



CHAPTER FOUR

RESULTS AND DISCUSSIONS OF THE MAIN STUDY

This chapter is subdivided into two parts. Part one provides a detailed description of the STAR project which was implemented at a two-day residential STAR Camp held in May 2002, the processes that the STAR participants (students and other key players) went through and the products they produced. Part Two highlights the complexities of conducting a school-based Action research; examines the learning curves and processes of both the teacher and students; and the presentation of the key findings.

4.1 General Discussion on the Main Study

4.1.1 Reading Programme during the Trial Periods

As discussed in Chapter Three, three test pilots were conducted from 1999 to 2001 to test the feasibility and the effectiveness of the alternative reading programme, i.e. the **5-in-1** and later known as the **STAR** project. Throughout those trial periods, despite evidences of students' interest in reading, the increase in students' visits to the library either to borrow books, CD-ROMs or using internet was not as significant as the results shown during the main study conducted in 2002.

This is because the main study was made to be more focussed, more purposeful, and goal-oriented. The conclusion derived was that any 'stand alone' intervention programme conducted in school on an ad hoc basis would not be able to sustain the interests of both the teacher and students. One of the lessons learnt during the three-year trial period was the need to conduct the programme within the school premises and under proper supervision where students' works

could be monitored, displayed, showcased and publicised. Such outcomes had the effects of sustaining students' interest and motivation in reading and other related work that they had to do as they find them meaningful, relevant and interesting.

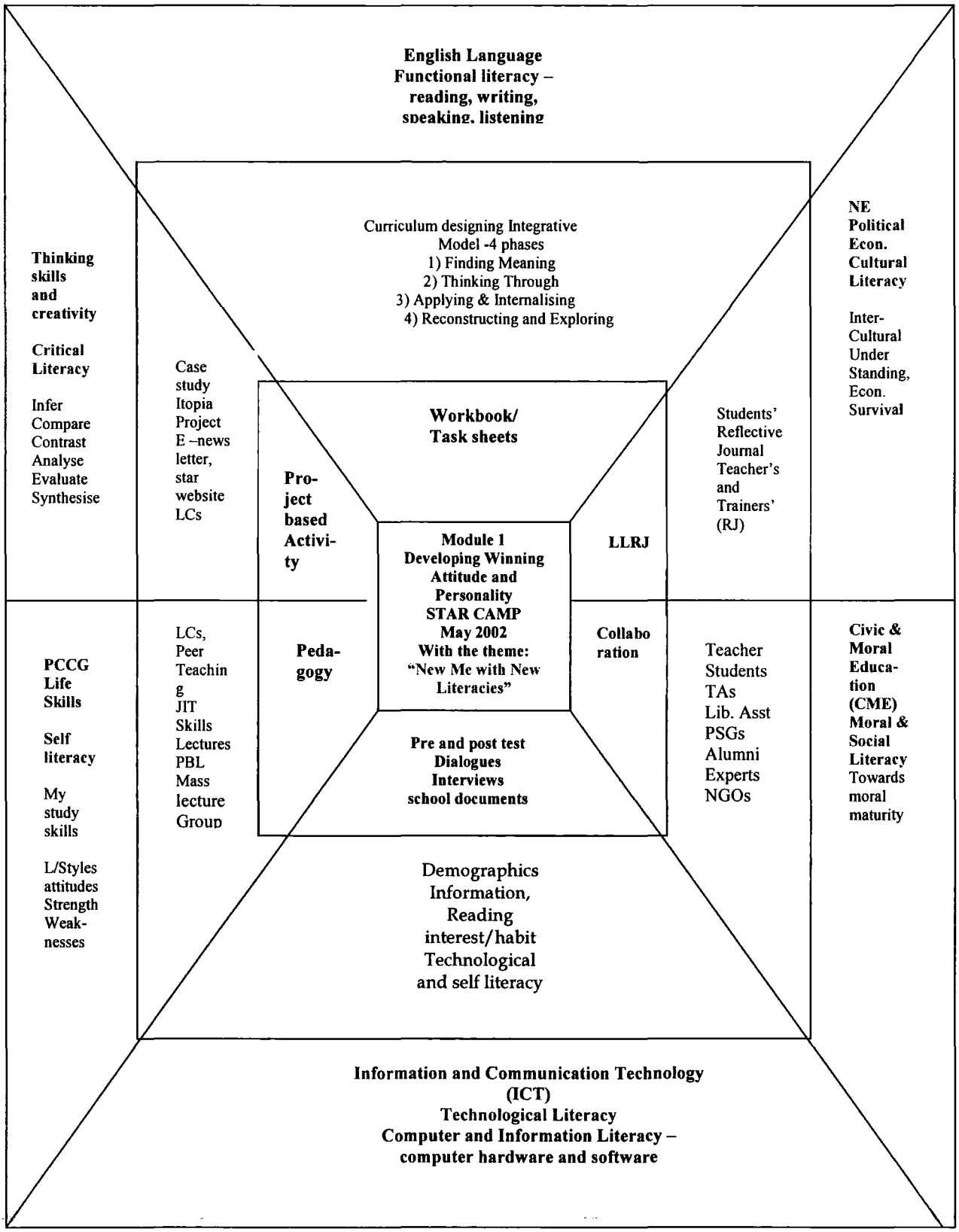
That explained why they had proposed spin off programmes such as the Service Learning, where they became 'Reading Ambassadors', helping the disadvantaged pre school children to read in the Family Service Centre, initiating Entrepreneurship Programme, to raise fund to help needy students in the school, organising "Job shadowing", and finally decided to participate in iTopia 2002 to initiate the two-day School Open House.

It is worth noting that the changes made to the actual study of the STAR project were not confined to the name of the project *per se*r but appropriate revisions were made after each pilot test to improve the curriculum (task sheets), methods of implementing the project, timing of instruction, mode of delivery, instructional designs. The aims of the study were revised accordingly.

4.1.2 The Multi-dimensional Literacy of STAR Project

The uniqueness of the STAR project lies in its packaging. The project not only promotes reading (both print and screen-based) but improves technological literacy of students which includes information and computer literacy, and other relevant aspects. The integration of the different aspects of literacy in the curriculum using multiple approaches and teaching strategies for multiple learning outcomes into the residential camp is represented in Table 13.

Table 13: Conceptual Representation of Multi-dimensional Literacy of the STAR Project



4.1.3 The Formation of Learning Circles

One of the outstanding features of the STAR project was the formation of Learning Circles (LCs) adopted from the Teachers' Network.[47] The LC serves two functions: one as a platform for the researcher to get feedback on the implementation of the project and; the other, as a tool for students to brainstorm, discuss and improve on their project task and learning journey for effective presentation during the iTopia. Being collaborators and partners, the students provided a great deal of support in terms of ideas, manpower and technical knowledge.

Since this is the first time the researcher and her students implementing this, a briefing on the concept and processes of LCs was conducted at the initial stage (before the implementation of the STAR camp). Since the participants were keen, the researcher had asked them to simply experiment and apply the concept during the four-month period. Participants made their own choices as to what area they wanted to focus on and who to work with.

[45]Learning Circles (LC^{TN}), one of the three WITS tools, is an effective professional development tool in encouraging teachers to be reflective practitioners, collaboratively identify and solve problems in instructional practice, publish findings and share new insights with fellow professionals. The LC^{TN} cycle of R P A O R [Initial Reflection, Planning, Action, Observation, Critical Reflection] rests on the skills of reflection and dialogue as members play the role of a Critical Friend (professional critic, sounding board and emotional support to one another). It helps teachers to reflect and generate meaningful conversations on pedagogy. For further details, see URL: http://sam11.moe.gov.sg/tn/professional.htm. The concept of LCs was simplified for students so that they could understand and use the tool to plan, explore, perform and execute various project works for the iTopia 2002.

Ten LCs as reflected in Table 14 were formed. Each LC, headed by students who showed leadership capabilities, concentrated on one aspect of the STAR activities and tasks.

The LCs provided opportunities for students from different ethnic group, academic streams and levels to brainstorm new and innovative ways to present group projects to be displayed during iTopia. They were given a set of generic questions in a form of a standard template to consider and respond to as a group:

1. Why do we use LC to do the task assigned?
2. How do we ensure the task we do is the best for iTopia?
3. In what way does the LC help us in doing our work for iTopia?
4. What have we learnt from our experiences?
5. How do we (as a group) feel about it?

Table 14: Details of Learning Circles Groupings

No	Name of the LCs/	LCs Tasks/Project descriptions	Name of student	Remarks
1	STAR Online (an E-learning portal)	Developing a learning portal STAR ONLINE. Each student was given a password to access the portal to do their work online.	Bagurudeen, Tharani	Former PingYians
2.	STAR.com (an E newsletters)	Creating a STAR Newsletter to provide an update of the development of all the STAR activities; and creating the Read, Evaluate and Share (RES) column for students to post their readings/reviews	Firdaus (402), Rashad,	
3	STAR Presentations	Organising and preparing presentations through advanced PowerPoint by using Print Artist to be presented to the foreign/local conference delegate	Omar (401)Nordin	Slides were used for school, cluster, presentations
4.	STAR Website	Designing a special website called STAR.COM to capture working progress, interlink and streamline all activities.	Nigel (401), Khartik, Shameer	
5.	Video Production Team	Recreating the Attitude for Success video clippings for local flavour	Heeru (302), Kusu, Vaishnavi, Yvonne	Involved students from drama team
6	Video Editing/ Recording Team	Recording and editing the STAR CAMP and iTopia event.	Rinaldi (203) Shawn	IT and computer Club member
7	Service Learning	Becoming Reading Ambassador to help under privileged kids in the neighbourhood	Letchmi (413) Xiu Li, Seri	Worked with Bedok FSC
8	Job Shadowing	Organising students in both virtual and real Job Shadowing with three local companies	Rashad /Kelli (402)Kamsani	Assisted by PSG member Mr Cheng
9	Entrepreneur ship	Thinking of business ideas and preparing a write up on business ventures and translating those ideas into 'real' business using scrap materials	Ahmd, Ratna Devi, Asha, Kenneth	
10	STAR iTopia Project	Conceptualising, organising a two-day open house through Learn@School: • "Launching station" at school lobby –for launching & welcoming speech • Star Presentation at AVA Room • Star Online Demo at Lab 2 • Star Exhibitions at Students Learning Centre • School Co-op in the Computer Club Room • Refreshment at the school Library	Mrs Leong, HOD Mr Low, Mdm Bibi Jan, Diana, Ayub, Iskandar, Hang Siang (former Pingyian)	Each participant was given an evaluation feedback called I reflection and a star key chain as a souvenir

4.1.4 Introducing a built-in End Game: Participation in iTopia.[48]

One of the outcomes of the pilot tests was the realisation that students need to have a platform or an "end-game" to showcase all their projects. The school's decision to participate in the national event iTopia propelled both the teacher-researcher and STAR participants towards greater collaboration in the learning outcome. Showcasing students' projects and efforts enhanced the collaboration and partnership between the teacher researcher and participants. In their attempt to make the STAR project a success, both the researcher and participants managed to develop their learning capacity and able to forge greater bonding through the shared vision.

4.1.5 iTopia itinerary at PYSS

Through the iTopia event, PYSS gained the recognition as one of the schools that is strong in ICT. It was selected to showcase IT related activities through a two-day Learn@school open-house that was held on the 26th and 27th July 2002 where the school played host to both local and foreign educationists. The programme for that day consisted of the official launching of the event at the FOYER; briefing delegates on the STAR project in the school auditorium; live demonstration of the development of in-house E-learning portal called STAR.ONLINE which was developed with the help of PYSS former students at the Computer Lab; and a presentation of the STAR.COM website and E Newsletter by students and finally the visit to the exhibition room where all students work was displayed.

[48]The national event, held from July 24th to 27th 2002, was organised by the Ministry of Education. Only ten per cent of Singapore schools were selected to showcase the milestone achievement of the implementation of IT in Singapore schools.

The delegates were later briefed about the school IT Cooperative and followed by visit to the Lan Gaming and finally refreshment. Participating students were happy to share their experiences and works during sharing sessions held with visitors

4.1.6 The impact of iTopia

While one may argue that participation in an external event had skewed the impact of the reading project, it is worthy to note that students had looked forward to the opportunity to showcase their project works (both artefacts and web-based). Students' participation in the national event was a tangible 'end-game' that put greater relevance to and meaning in their involvement in a reading project that would also bring glory to the school. The sense of shared vision and aims were more pronounced for both the teacher and students; thus providing a stronger justification to collaborate in reading programme that could achieve better learning outcomes for both students and the teacher researcher. This had brought about other non-tangible benefits for both of them, for example the sense of pride, the sense of confidence, the sense of accomplishments that boosting their morale and self esteem.

4.1.7 Timing of Implementation

To circumvent the issue of timing and monitoring a large group of students, a residential camp was organised in May 2002. The camp was held during the last week of the second school term. It was felt that students could then complete their project works during the four weeks of school holidays following the camp; thus, giving them time to develop their artefacts and other products for the iTopia event. The two-day intensive residential camp was chosen as the mode of delivery because it allowed participants to have an intensive enrichment reading

programme followed by a mid year vacation programme. External experts and trainers were invited to give talks on various aspects of literacies.

4.1.8 Aims of the camp

The aims of organising the camp were as follows:

1) To expose students to different concepts of new literacies;
2) To provide students with opportunities to know more about themselves, the community and the changing world;
3) To inculcate a positive and winning attitude and values;
4) To promote collaboration, teamwork, tolerance and understanding among students of different levels, academic stream, race and religion;
5) To promote entrepreneurship skills;
6) To establish a link between the newly acquired knowledge and skills learnt to practical application through participation in service learning, entrepreneurship training skills, career counselling programme and job shadowing; and
7) To motivate students through talks given by experts from different fields.

4.1.9 Briefing and Pre-Test Survey

A day before the camp, all participants gathered at the school AVA room to attend a two hour briefing. Each pupil was issued a file containing a camp booklet,[49] Module 1 task sheet, and Learning log and Reflective Journal (LLRJ). [50] After the briefing, participants had to answer the pre-test questionnaire to capture essential demographic data and other relevant information pertaining to participants' perceptions of their reading interest, habit

[49]See Appendix 7 for details of the camp booklet.
[50]See Appendix 8 for details of the LLRJ.

and current level of different aspects of literacy.[51] The 'baseline' data provides the entry point or behaviour of each participant before the implementation of the STAR programme. The pre test data was later compared to the post test data to ascertain whether there are changes in participants' reading habits and other relevant information as part of quantitative analysis to measure the impact of the programme on the participants.

4.1.10 STAR Camp Programme

The two-day residential camp with the theme of 'New Me with New Literacies' was meticulously planned to optimise limited time and resources; and to avail students to several trainers who would make presentation for a short duration. Participants were given time to reflect on the activities and were asked to share their feelings, observations and any new acquired knowledge during the daily briefing sessions. Meditation sessions were held so that participants from different race and religions could share their thoughts and perceptions on cultural practices and educational achievements. Table 15 shows the programmes held during the camp.

[51] See Appendix 6 for the pre-test and post-test questionnaire.

Table 15: The Camp Programme

TIME	Day 1 (Friday May 24,2002)	Day 2 (Saturday May 25,2002)
7 a.m.	Arrival/Reading Programme	Meditation (Cross Cultural/Religious)
8.00	OPENING CEREMONY (Mrs. Leong) &|Briefing And pretest - ICE BREAKING – Madam Bibi Jan	
8.30 (2hrs)	**S1: SELF LITERACY** **Understand me Please!** Knowing Me, My Learning Style & Preferences, Discover My abilities, Strengths, Interest & Passion,	**S7: ECONOMIC LITERACY** Concepts of Economic literacy Entrepreneurship for Beginners Global Technological Development
10.30	**JOURNAL RECORDING**	
11.00 (2hrs)	**S2: SELF LITERACY** **I am what I think** I can! Attitude	**S8: ECONOMIC LITERACY** **Project Work (Brainstorming and incubation)**
1.00	**LUNCH**	
1.30 pm (2hrs)	**S3: MORAL LITERACY** **ID, EGO & SUPEREGO** Passion & Compassion Compassionate ME –Listening skills Towards achieving moral maturity	**S9: CRITICAL LITERACY** **The thinking ME** Elaborating, analysing, comparing, classifying and remembering skills_
3.30 (2hrs)	**S4: CULTURAL LITERACY** **Cultural Excellence Exchange– Seeking the treasure in us** "Be the world I want to be" Understanding & appreciating diversity	**S10: CREATIVITY** **My creative self** Decision making, problem solving, and creativity_
5.30	**GAMES/JOURNAL RECORDING**	
6.00 (1 hr)	**S5: TECHNOLOGICAL Literacy** **My New Paradigm in the new world** (Computer, Information, Media Literacy)	EVALUATION AND FEEDBACKS (Post test) and Discussion on Follow up Activities: 1) Service learning 2) Business venture **3)** Job Shadowing **ITopia 2002 Exhibition**
7.00	**DINNER**	**End of camp…Beginning of the New ME journey**
7.30 (2hrs)	**S6: TECHNOLOGICAL Literacy** **I am ahead of the Curve!** My career options in the IT world Career Guidance programme The importance of 5 Is	**Closing Ceremony** **Home sweet home**
9.30 (1 hr)	Debriefing for the day – Sharing of observations and feedback	
11.00	**Prepare for the Night**	
11.30	**Lights out**	

4.1.11 Programme Delivery

The camp was conducted solely by the researcher with the help of five professional trainers.[52] The trainers are a specialist in their own area of expertise and were engaged to give lectures on various aspects of new literacies and to be facilitators for group discussions and reflections. This was done so that students could obtain first hand information and experience from expert speakers. From the initial exposure, they could further explore their area of interest through spin-off activities such as Service Learning, Entrepreneurship and Job Shadowing.

The main lesson conducted was based on the CD-Rom *Attitude for Success.* Students completed a task sheet related to the topic[53]. The task sheet was divided into four segments. The first segment is entitled ***Finding Meaning*** — a trigger activity to get students to apply their prior knowledge and current understanding on the concepts discussed. The second is known as ***Thinking Through***; the third requires students to ***Apply and Internalise*** what they learned from the two earlier segments. The last segment is ***Reconstructing and Exploring*** which prodded students to go beyond what they learned by conducting group-based project works.

These projects were part of the evidence-based assessments used to analyse the degree of engagement, involvement and participation of students. Participants also underwent other appropriate teaching strategies — part of the researcher's understanding of the application of different learning styles — including mass

[52] The curriculum vitae of the trainers are attached in the camp booklet. See Appendix 7.

[53] Refer to appendix 4 for details of the task sheet

lectures, hands-on sessions, group discussions, Web-based learning at IT labs and reflection sessions.

The application of these strategies were the researcher's attempt to apply the concept of Multiple Intelligence, differentiation in instruction, theories of constructivism, group dynamics and reflective teaching practice.

4.1.12 Completion of Skill-based Project Work

Participants worked on their workbook and projects after the completion of the reading programme. The various assignments focussed on different aspects of skills as extracted from the booklet on Module 1 listed in Table 16 below.

Table 16: Matrix of Skill-based Project Work extracted from Module 1

Thinking /Problem solving skills	**EL skills**	**National Education Literacy**
• To use metaphor /mental association exercise on their concept of attitude (page 8, 10) • To compare and contrast the concept of achievement in different cultures	• To write a short story on personal version of success stories (page 18-20) • To write on people who have showed this winning attitude /personality (page 24) • To review well-known stories with winning personalities Oral Presentation skills	• To identify Malay, Chinese and Indian proverbs, folk tales, idioms, sayings that are linked with the concept of winning attitude and achievement-oriented values. This is part of the **"Seeking Treasure within us"** – an intercultural approach to value teaching (p 25) • To compile songs with similar theme in four different languages
• To conduct a case study on Rozy's encounter with Discipline Mistress as part of problem-solving skill (page 21)	• To imagine as student leaders, designing an information leaflet for the new secondary one students during the school orientation (page 26)	To explain the Concept of Total Defence and Economic defence that related to the discussion on human productivity by being positive students and future workers – tied this with the Social studies syllabus and Civics and Moral education (Page 27)
ICT related skills	**Leadership/Social skills**	**Self literacy/PCCG**
• To design e-learning portal or web based lesson called ***STAR Online*** with the help of former Ping Yians. • The Upper secondary students created **STAR COM** to update and upload all developments related to the activities of STAR project • Students created ***E Newsletter*** to post all the readings/review. To conduct video recording and editing for the iTopia and other presentations	• Students leaders to head the ten **Learning Circles** • Students assisted in organising school-based open house • Students from the Drama Club to help in preparing alternative scripts for the video production on Winning attitude with the local flavour • Group leaders organised the spin off programmes, Service Learning, Entrepreneurship and Job shadowing	• To do learning profile • To reflect on their personal aims, self strength and weaknesses • To predict what they are likely to do 10 years from now through the Goal setting exercise

4.1.13 Characteristics of Constructivism in the STAR Project and the Study

This study sees the amalgam of the four main theories and principles of learning that formed the framework of this research. In the application, the researcher had successfully created the settings in which she was trying to enhance the awareness, develop attitude, build skills and construct knowledge of her students. Below is the list that reflects the application and integration of constructivism:

- STAR Curriculum was presented whole to give emphasis on big concepts – such as the concept of POWER in order to empower one self, and ATTIDUDE FOR SUCCESS to inculcate the winning attitude to survive in the KBE.
- Students' suggestions and feedback were highly valued – the pre and post test, interviews, dialogues, learning log and reflective journal and focus group discussions among the learning circles were carried out with the understanding that students learn best when their points of view are sought and valued. Here, the distinction between those two endeavours of seeking and valuing should be highlighted. Often, in the classroom situations, teachers seek students' feedback. At the same time, this was done without valuing those viewpoints which help to guide curriculum. Educators need to and must value students' inputs because the latter group are the recipient of educational changes and curriculum.
- STAR Project Curricular and activities focussed heavily on manipulative materials — teacher-researcher and the five trainers conducted the programmes in an interactive manner and mediated the environment to suit students
- Assessments of student learning were interwoven with teaching, and were done by observing students at work and through students' portfolios and exhibition.

- Students primarily worked in groups, fostering peer collaboration and peer learning.
- The application of the philosophy that learning environments should support collaborative construction of knowledge involving both teachers and students.

The continuous process of thinking and learning was the modus operandi of the STAR project. That process was seen as adaptive where the learner organised experiences so that he or she can 'fit' with his or her previously constructed knowledge. Participants were guided, and scaffolds were provided for optimum learning. Upon briefing the group leaders on the workings of LCs, they made a choice on one area of interest for 'specialisation'. Thus, students were assessed not by their ability to report bits of information but for what they were able to generate, demonstrate and exhibit (Brooks & Brooks, 1999:16)

4.1.14 Use of Motivational Theme Songs

Since the participants enjoyed listening to music (especially pop music) while reading or doing their group work assignments, the researcher had included motivational and inspirational songs[52] as part of the teaching techniques. Lyrics and words from the songs were used to inject fun and reinforce positive and winning values throughout the STAR programme and widen participants' pool of vocabulary through simple fill-in-the-blank worksheets. In one of the follow-up projects, selected participants from different racial groups were to research and identify songs in their Mother Tongue that have similar theme and impact. The participants managed to compile a collection of songs and lyrics that promote positive and winning attitude in local settings through local songs. Besides appreciating the lyrics of the songs, the sharing of those songs in

[52]Some popular titles include R. Kelly's *I believe I can fly* and Gloria Estefan's *Reach.*

different languages fostered greater racial awareness and understanding among students of different racial groups.

4.1.15 General Feedback and Responses to the Camp

Generally, participants responded well to the programme as reflected in the post camp evaluation. Among these were:

1. Knowing ourselves better; and Understanding the meaning of 'Attitude' and 'Winning Personality';
2. Discovering our strengths, passion and interest;
3. Appreciating the personal personality profile exercise;
4. Improving English language proficiency;
5. Having more confidence to make presentations in public;
6. Having the ability to see the reality of life outside school;
7. Understanding the meaning of the learning experiences; moral maturity
8. Seeing the connection between what is done in the school and what is happening at the national and global level;
9. Providing opportunity for the expansion of creativity, especially during the group work and other IT related assignments;
10. Enjoying the use of inspirational songs as background music for the camp;
11. Interesting to study English language and MT through lyrics of the songs.

The programme has its weaknesses as well. About three students decided to opt out half way into the programme as they were not willing to sacrifice their mid year vacation to complete all the assignments for iTopia. Some had plans made by parents during the one-month vacation. Students also felt that the long hours

of continuous programme was simply too much and they were overwhelmed by the expectations set for them. The summary of the result analysis of the main study (STAR CAMP 2002) is reflected in Table 17.

4.2 Quantitative Analyses of Data

The researcher documented and monitored the processes of the research and students' learning outcome based on quantitative and qualitative analyses. For the quantitative components, it includes all general information about students' background as reflected in the pre-test questionnaire.

The following statistical techniques are used in the study:

1. Descriptive statistics: To obtain demographic profile of participants; which consisted of class, academic stream, gender, the availability and usage of PC at home. Items like parental education and types of house that they live which reflect family economic status were included but not reflected in this study.
2. Descriptive statistics: To explain frequencies of each survey item and the score of students' perceptions of their reading interest, language proficiency, self and computer literacy and their life skills. Comparisons made in the score of both the pre and post test for all the items in the questionnaire would reflect differences, if there were any, of the two scores made by the same student.

Table: 17 Summary of the Result Analysis of the Main Study (STAR Camp)

Target group	Mode of delivery	Key Collaborators	Significant findings (Strength)	Significant findings (Weaknesses)	Critical Reflections and Follow-up actions/revisions	AFIs (Area for Improvements)
Sec 2 3 - 4 - Total= 65 students (excluding Former SWAT members who served as advisors; Alumni Members)	Two-day Residential STAR Camp in the school Common Process for all – meal, sleeping area and sharing of duties	All the above key players and Alumni, external specialists/ Trainers, Teacher Network, NGOs and private sectors, PSG	1. Students' participation was very high during the camp, despite the school holiday and the MT 'O' level exam for Secondary 4; 2. They welcomed the idea of having expert trainers from different fields to share about different aspects of literacy; 3. They enjoyed group activities and the many hands-on sessions; 4. The background and theme songs were effective as they met the aims; 5. There is evidence of high collaboration among participants; 6. Multi -cultural, levels, stream groupings proven to be good for bonding purposes; 7. They claimed that they saw the 'big picture' as they realised the need to have those skills and the interconnectedness of the knowledge taught (Holistic nature of STAR); 8. The national event iTopia was important in propelling students to go to a higher level of performance	1. Limited impact because number of students involved was relatively small; 2. The concept of one-man-operation could be rather stifling ; 3. There was no systematic tracking done between the reading programme and the students' academic performance in the school; 4. The innovation was done on ad hoc basis — only one department (MRL/IT). Consequently, changes were done at **event rather than at systemic** level; 5. Out of the 65 participants, the real champions of STAR who served as core group was about 30 students only; remaining 60 per cent played a supportive role only	1. Need more 'drivers' if a programme of such nature is be extended to more students; 2. For greater impact and results, programme has to be implemented by all departments in the school; 3. The process of linking the programme to the academic performance could be tedious but useful as school moves to outcome-based education; 4. To highlight the aims of programme to keep abreast of new developments in reading and technology; 5. Students could be potential agents of change; 6. To become reflective learner, teacher must equip students with the processes; learning circles must be implemented in an effective way; and proper briefing must be done at the initial period.	1. It was a stand-alone 'innovation' and will be more effective if it is a school-wide Action research 2. Key personnel of the school could also be the 'drivers' behind the programme if it is found to benefit the students 3. Streamline the existing curriculum by making it seamless without over teaching and overloading students and teachers

4.2.1 Profile of Camp Participants

65 students were randomly selected from Secondary Two to Four to attend the camp (see Table 18). The details of the sample group for the main study were given earlier in Chapter 3. Below is the basic information about the sub-groups of each category in the total sample group.

The percentage of students from the Express stream is 38.4 per cent , Normal Academic is per cent while the Normal Technical stream is per cent.

Table 18: Distribution of Participants by Gender, Stream and Level

Stream/level	Sec 2 male	Sec 2 female	Sec 3 male	Sec 3 female	Sec 4 male	Sec4 female	Total (n)
Express	8	6	3	3	4	1	25 (38.4%)
Normal Academic	7	5	3	4	3	4	26 (40%)
Normal Technical	4	5	0	0	2	3	14 (21.6%)
Total	19 (29.2%)	16 (24.6%)	6 (9.2%)	7 (10.%)	9 (14%)	8 (12.3%)	100%

4.2.2 Computer Usage at Home

Based on the survey collected in 2002, 54 per cent of the participants owned a PC at home but only 48 per cent had access to the internet (see Tables 19a and 19b). Students could use personal computers (PCs) to do projects and to supplement their learning journey; and students with internet access were deemed to have an advantage because they were able to do e-research to supplement their learning.

Table 19a: PC Ownership at Home and Internet Access

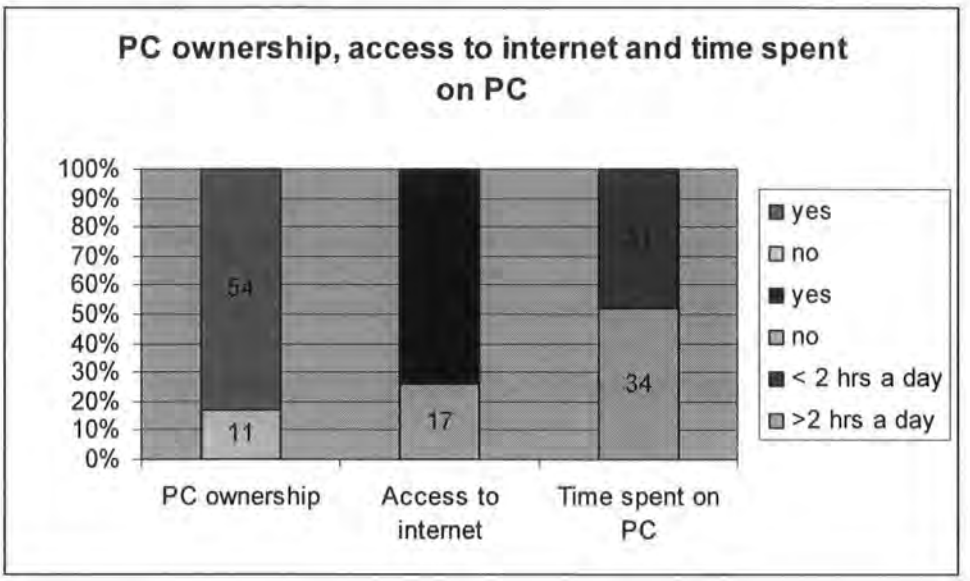
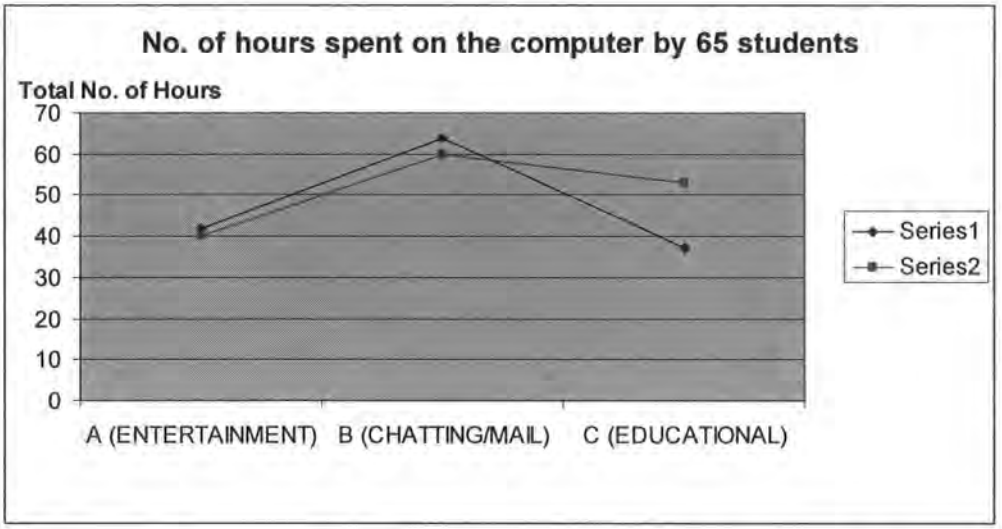


Table 19b: Summary of PC Ownership at Home and Internet Access

Items/Sample n=65	Yes	No	‹ 2 hrs a day	› 2 hrs a day
PC ownership	54 (83.1%)	11(16.9%)		
Access to Internet	48 (73.8%)	17(26.2%)		
Time spent on PC			31	34

However, the pre-test data showed that participants used their PCs mostly for chatting and e-mailing, playing on-line games and for entertainment (see Table 20). When asked, male students admitted to spending at least two hours a day after school at gaming arcade. The school then decided to open a gaming arcade within school premises in 2001 to minimise students' visits to commercial arcade and promote 'healthy' gaming activities within the school compound under the responsible adult supervision.

Table 20: Computer Usage at Home —Comparing Pre (Series 1) and Post Test (Series 2)



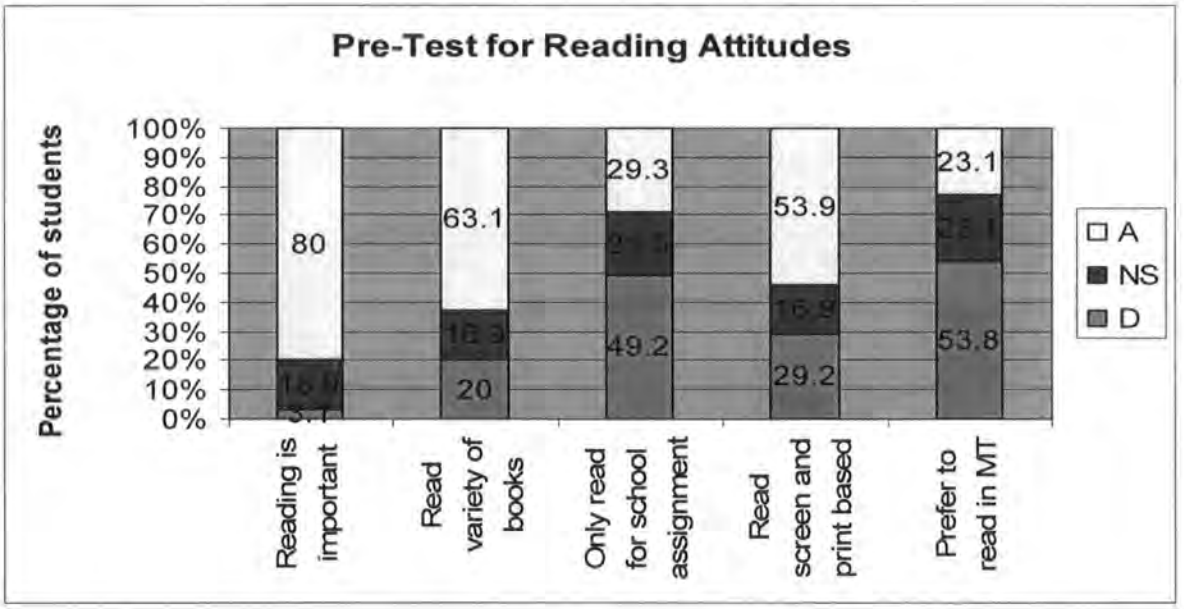
Based on the post-test, there was an increase of 22 per cent in usage for educational aims with minimal changes in usage for entertainment and chatting/emailing. Nevertheless, students who enjoyed playing computer and video games might not be severely disadvantaged as they "may develop certain forms of visual-spatial reasoning" (Heally, 1998:158). They might be deprived of harnessing the positive aspects of PCs only if they were to spend most of their time playing games on the computer.

The increased in PC usage for educational aims (as observed in all three pilot tests) was a result of the on-line reading programme that motivated participants to complete school assignments, project work or other related tasks using the PC as a learning tool. The latter was not a major concern though, as the aim of this study is to harness technology to get students to read. If students had spent more time using PC for educational aims, then it was an added bonus to the STAR project that basically attempts to promote online reading.

4.2.3 Participants' Reading Interest and Habits

The pre-test data on reading attitudes (Table 21a) shows that 80 per cent of the students perceived reading as an important activity. However, only 63 per cent read a variety of books and 33 per cent read only for school assignments. 54 per cent claimed to read both print and screen-based materials and the same percentage indicated their preference to read in English, rather than in their own mother tongue language (Chinese, Malay or Tamil).

Table 21a: Participants' Reading Interest and Habits (pre-test)



After attending the STAR project, participants' perception of the importance of reading increased (see Table 21b and 21 c) from 80 per cent to 96 per cent; while those who read widely with variation had gone up from 63 per cent to 80 per cent. Those who read for leisure increased from 50 to 70 per cent.

The increment was indeed to be expected considering the aims of the project were to stimulate and promote reading interest. This concurs with Doiron's study in 2002 which states that multi-media approaches to encourage reading and teaching will result in a higher quality of students' learning.

Table 21b: Participants' Reading Interest and Habits (post test)

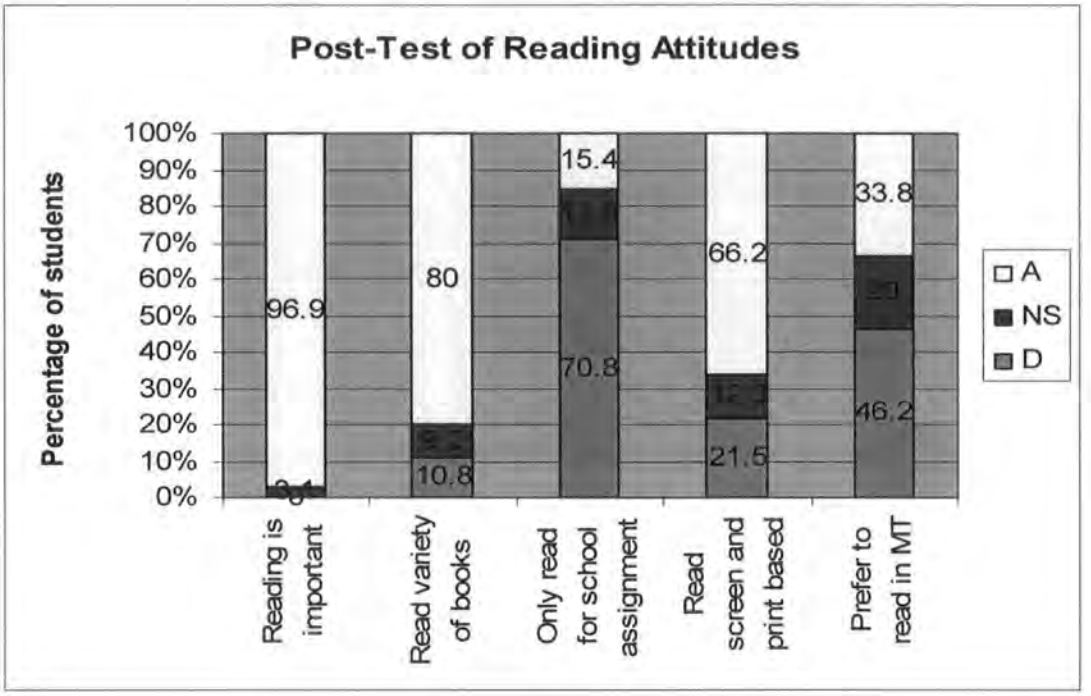


Table 21c: Summary of pre and post test on Reading Interest

	Pre – Test			Post – Test		
Items/sample	Agree/ SA	NS	Disagree/ SD	Agree/ SA	NS	Disagree/ SD
Reading is important	80%	16.9%	3.1%	96.9%	3.1%	0%
Read variety of books	63.1%	16.9%	20%	80%	9.2%	10.8%
Only read for school assignment	29.3%	21.5%	49.2%	15.4%	13.8%	70.8%
Read screen and print based	53.9%	16.9%	29.2%	66.2%	12.3%	21.5%
Prefer to read in MT	23.1%	23.1%	53.8%	33.8%	20%	46.2%

Looking at the preceding three tables, one could conclude that the enrichment reading programme did help participants realise the importance of reading. Though modest, an increase of about 17 per cent was recorded. In their journal entries, students indicated that they liked the programme because "there are so much of useful things to learn" and that the multi-disciplined, multi-media and

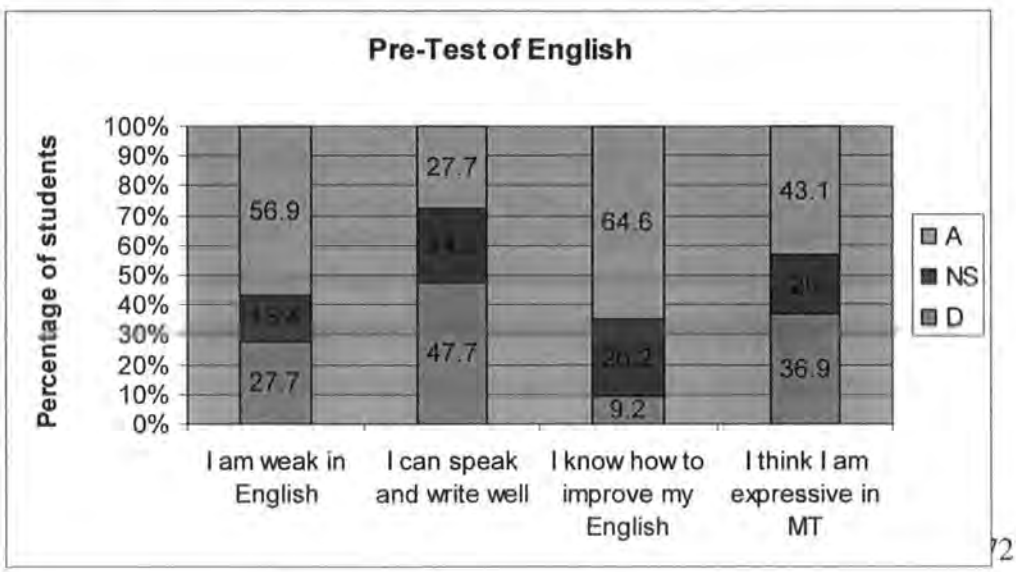
multi-literacy approach to learning was labelled as "practical knowledge". They enjoyed the many hands-on sessions conducted by the professional trainers.

While doing the assigned projects, participants had to read up on various topics. As a result, acting on their idea and effort, they created the STAR.Com website—an E-newsletter to update on the development of all the STAR activities. They also created the RES—Read, Evaluate and Share—column for students to post their readings and reviews. Students' works and book reviews posted on the website and blogs prompted and encouraged their peers to log on to the STAR website to read what their friends had written. Thus, a slight increase of 12 per cent was evident in the print and screen-based reading.

4.2.4 English Language Proficiency

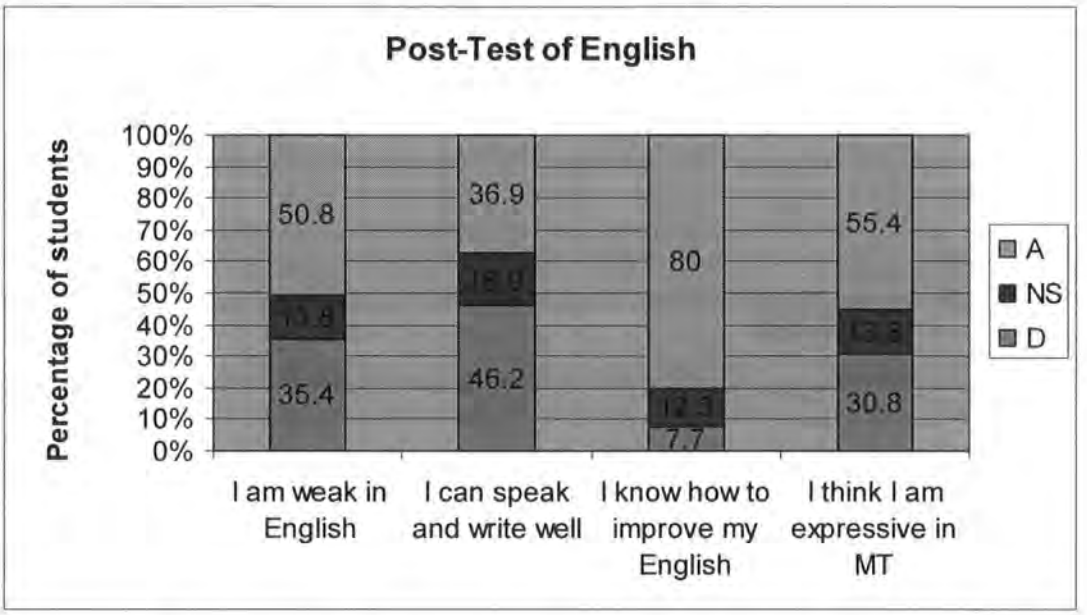
The second component of the study is to look at students' perception of their English Language (EL) proficiency (see Table 22a). 57 per cent of the students felt that they are weak in EL and only 27 per cent felt that they could speak and write well in English. Ironically, almost 66 per cent of the respondents claimed to know how to improve language proficiency.

Table 22a: Participants' Perception of EL Proficiency (pre test)



The reading programme however, did not change participants' perception of their EL proficiency. Only nine per cent felt that they had made some improvement (see Table 22b).

Table 22b: Participants' Perception of EL Proficiency (post test)



The researcher has to accept this lack of improvement because the programme failed to explicitly emphasise the language component of the programme during the formal session of the STAR camp which lasted for only 25 hours. Perhaps also, the programme did not last long enough to induce any measurable effects, on the participants.

It should be highlighted that the programme is not a course on the EL but a reading programme that encourages students to do extensive reading. Thus, it is worthy to note that there was an increase of 15 per cent in the number participants who became more aware of ways to improve proficiency in EL; ten per cent more students perceived that they could speak and write well; and 50.8 per cent instead of 56.9 per cent of the participants felt that they are weak in English after attending the reading programme.

Table 22c: Summary of Pre and Post Test on EL Proficiency

	Pre – Test Of English			Post – Test Of English		
	A/SA	NS	D/SD	A/SA	NS	D/SD
I am weak in English	56.9%	15.4%	27.7%	50.8%	13.8%	35.4%
I can speak and write well	27.7%	24.6%	47.7%	36.9%	16.9%	46.2%
I know how to improve my EL	64.6%	26.2%	9.2%	80%	12.3%	7.7%
I think I am expressive in MT	43.1%	20%	36.9%	55.4%	13.8%	30.8%

4.2.5 Moral/Self Literacy: Personal Attitude

Students' perception of their attitude and personal values were recorded as part of the pre-test survey. As shown in Table 23a, 78 per cent of the participants believed that their attitude would determine their altitude in life. However, only 66 per cent claimed they know how to develop a positive attitude. The remaining 34 per cent were unsure of building up positive attitude towards life. It is heartening to note that after attending the reading programme (see Table 23b), 80 per cent of the participants claimed they are more aware of attaining positive attitude in life.

Table 23a: Participants' Perception of their Moral Literacy (pre test)

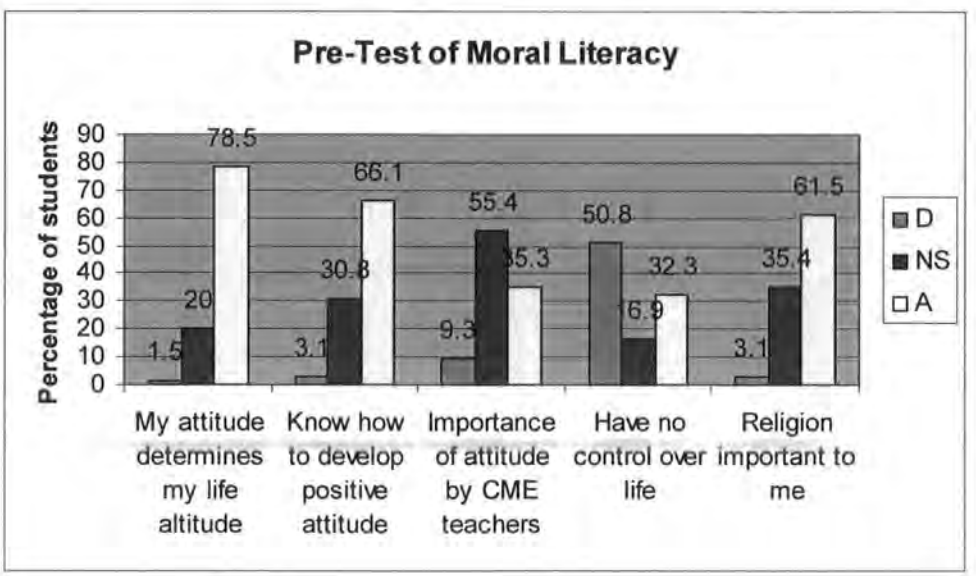


Table 23b: Participants' Perception of their Moral Literacy (post test)

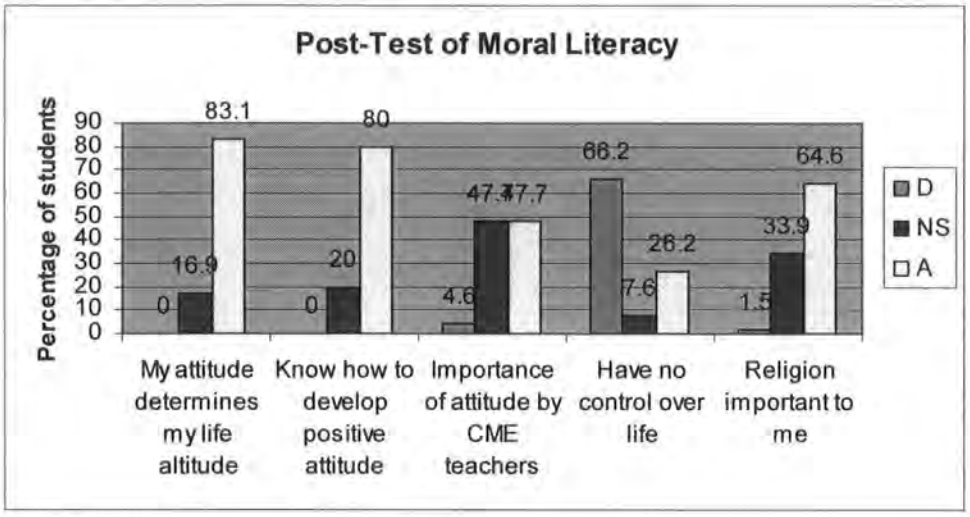


Table 23c: Summary of pre and post test on Self/Moral Literacy

	Pre – Test Of Moral Literacy			Post – Test Of Moral Literacy		
	A	NS	D	A	NS	D
My attitude determines my life altitude	78.5%	20%	1.5%	83.1%	16.9%	0%
Know how to develop positive attitude	66.1%	30.8%	3.1%	80%	20%	0%
Importance of attitude by CME teachers	35.3%	55.4%	9.3%	47.7%	47.7%	4.6%
Have no control over life	32.3%	16.9%	50.8%	26.2%	7.6%	66.2 %
Religion important to me	61.5%	35.4%	3.1%	64.6%	33.9%	1.5%

To measure students' perception of their CME teachers' role in inculcating positive attitude and values, item three was included. Only 35.3 per cent of the participants felt that their CME teachers fulfilled that role. After the programme, 47.7 per cent felt the same.

Nonetheless, there was some improvement in students' perception of their sense of control over their lives. The pre-test figure shows that 32 per cent believed that they had no control of their lives but only 26 per cent felt so in the post test. The module on developing winning and personality attitude and the concept of SWAT (Special Winning Attitude Teams) had brought greater awareness among the participants of their role in making their lives more meaningful by exercising personal choice and avoiding sense of helplessness.

The role of religion was constant in both the pre and post test; and thus the reading programme had no effect on their attitude towards religion.

4.2.6 National Education (NE): Economic and Cultural

Based on the pre test on NE (Table 24a), about 38 per cent of the participants claimed that they understood the six NE messages namely:

1. We have confidence in our future;
2. Singapore is our homeland, this is where we belong;
3. We must preserve racial and religious harmony;
4. We must uphold meritocracy and incorruptibility;
5. No one owes Singapore a living; and
6. We must ourselves defend Singapore.

After the STAR camp, five per cent more understood the NE messages (see Table 24b). However, a 'disturbing' trend observed is the tendency for students to enclave themselves with students of the same racial group. This is an expected "natural" response, despite the implementation of National Education programme which was formally introduced in 1997.

About 40 per cent perceived that they are closer to friends of the same race because they could communicate with each other. The programme did not change their perception on this issue though the camp did provide an opportunity for them to relate to people of different race, level, stream and gender. Nonetheless, 80 per cent instead of 73.8 per cent of the participants realised that they themselves have to forge ties for greater racial harmony.

Table 24a: Participants' Perception of NE (pre test)

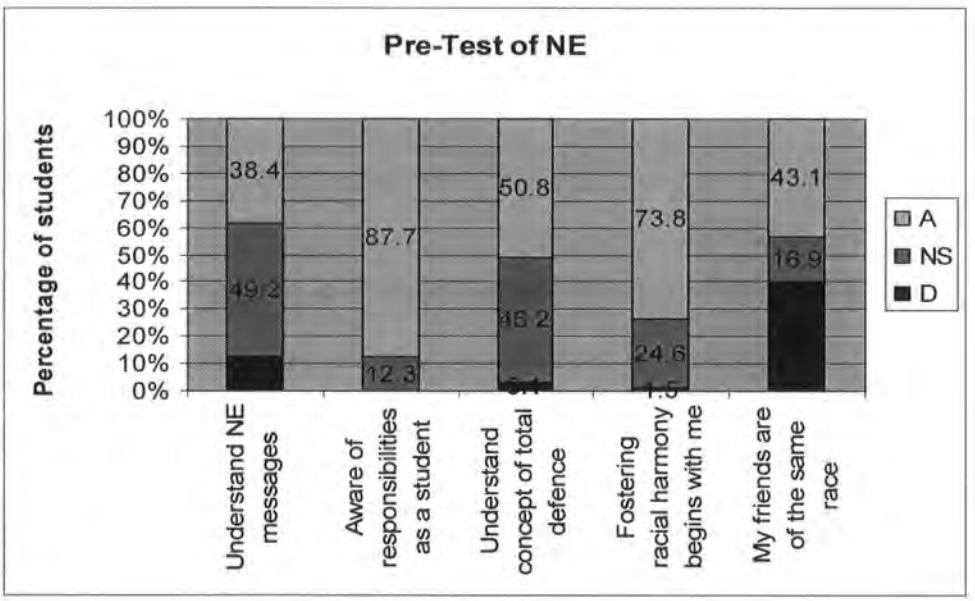


Table 24b: Participants' Perception of NE (post test)

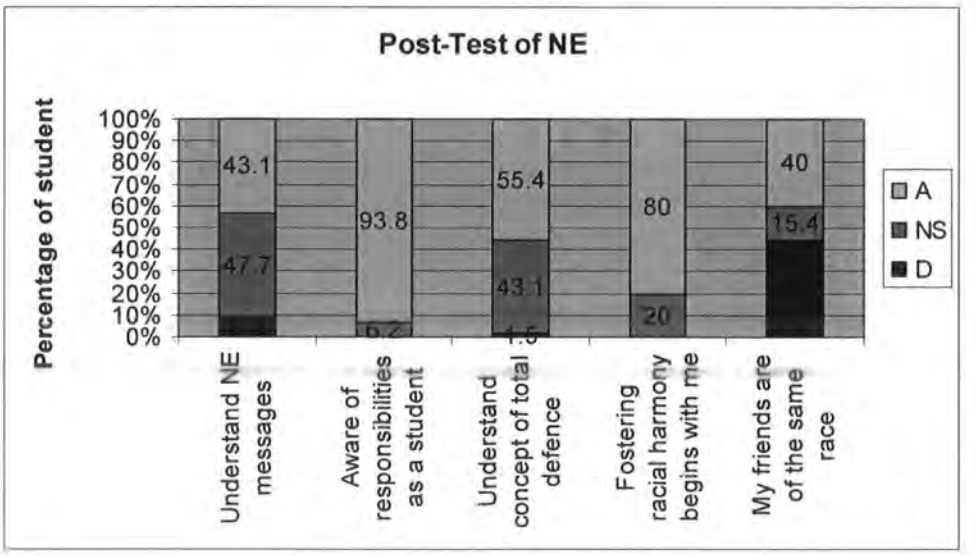


Table 24c: Summary of Pre and Post test on NE

Item	Pre – Test Of NE			Post – Test Of NE		
	A	NS	D	A	NS	D
Understand NE messages	38.4%	49.2%	12.3 %	43.1 %	47.7%	9.2%
Aware of responsibilities as a student	87.7%	12.3%	0%	93.8 %	6.2%	0%
Understand concept of Total Defence	50.8%	46.2%	3.1%	55.4 %	43.1%	1.5%
Fostering racial harmony begins with me	73.8%	24.6%	1.5%	80%	20%	0%
My friends are of the same race	43.1%	16.9%	40%	40%	15.4%	44.6 %

4.2.7 Technological Literacy

Some of the PYSS students were IT illiterate before they took part in the programme (see Table 25a). About five per cent were not proficient in using computer software and three per cent were not confident in using the PC for presentations. Thus, the Computer Literacy aspect of the programme was an eye opener to this small group of students.

Table 25a Participants' Perception of Computer Literacy (pre test)

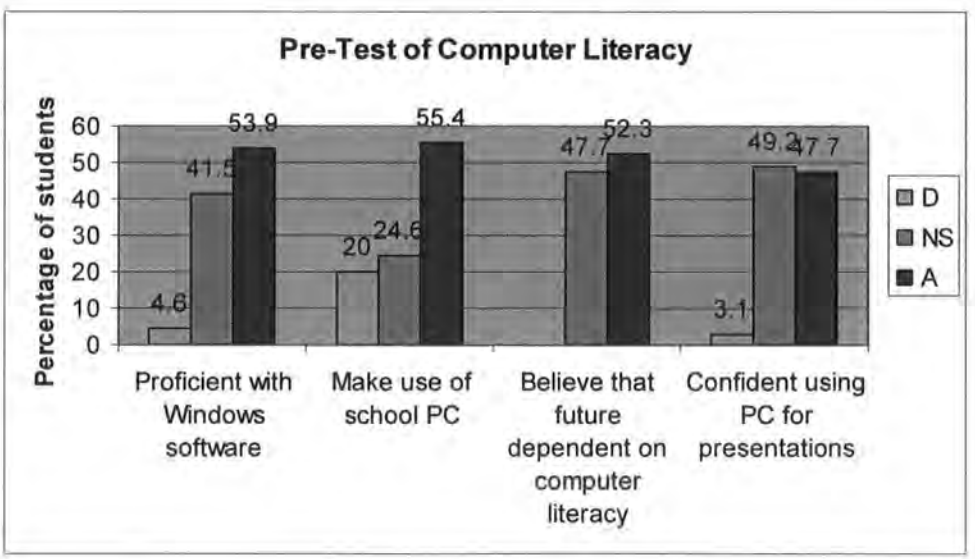
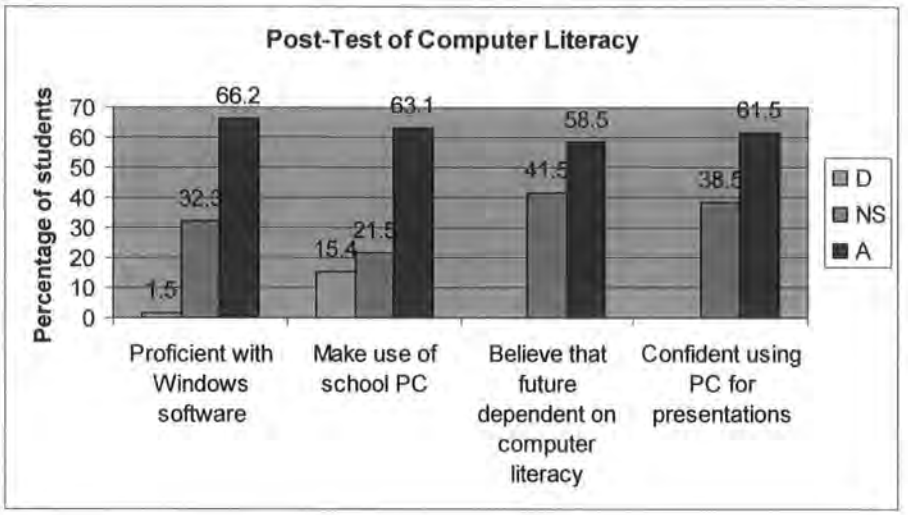


Table 25b: Participants' Perception of Computer Literacy (post test)



For some students who were not as IT savvy as their counterparts, the STAR programme had given them the opportunity them to explore the world of IT. Their proficiency in computer literacy increased, particularly when applying their skills through the Windows software, as reflected in the post-test. At the end of the reading programme, an increase of 12 per cent of students found themselves to be more proficient with the Windows software (see Table 25b). During the programme, many students had picked up the JIT (just in time) computer skills from their friends because participants had to complete their task sheet using the CD-Rom and project work using the computer and other media tools.

They had enjoyed surfing the STAR.com website; uploading the works of STAR members; and updating students on the latest happening and development of STAR activities. The participation rate of students in the E-learning process shows that more than 68 per cent had made use of the STAR.COM website, surfed, read, uploaded and downloaded the work of the participants. The increased in IT usage for educational purposes is looked upon as an encouraging

trend by the researcher. As shown in Tables 25a and 25b, there was an increase of 13.8 per cent in the students' perception of their confidence in using PC; and 61.5 per cent instead of 47.7 per cent were confident in using the PC for presentations after attending the STAR camp.

Table 25c: Summary of pre and post test on Computer Literacy

Rating scale	Pre – Test Of Computer Literacy			Post – Test Of Computer Literacy		
items	A	NS	D	A	NS	D
Proficient with Windows software	53.9%	51.4%	4.6%	66.2%	32.3%	1.5%
Make use of school PC	55.4%	24.6%	20%	63.1%	31.5%	15.4%
Believe that future dependent on computer literacy	52.3%	47.7%	0%	58.5%	41.5%	0%
Confident using PC for presentations.	47.7%	49.2%	3.1%	61.5%	38.5%	0%

4.2.8 Life skills

The measurement of life skills consists of seven items, namely: reading, communication, computer, planning, thinking, problem solving and relationship. The scale for the life skills was based on personal rating. The Likert scale was not used for this purpose. The rating ranged from 1 to 7, where 1 denotes the lowest with no skills and 7 represents the highest skill. In general, students rated themselves between 4 and 5 for these items.

After the post-test, the percentage of students rated 6 increased by 20 per cent. This data is consistent with the earlier measurement on students' perception of their reading interest. No comparison of responses was made across academic stream, level and gender. This is one of the flaws of the study. It would be more meaningful if a comprehensive analysis was made to study the students'

perception of each response in relation to their different academic stream, gender, level and even ethnic groups.

4.2.8A: Reading Skills

Based on Table 26a, it is evident that there was an upward shift in the rating scale of students' perception of their reading skills between the pre and post test results. For example, the lowest rating for the post test shows a decrease from 7.7 per cent to 1.6 per cent; and the highest rating has shifted up from 9.2 per cent to 20 per cent. This reflects students' positive perception of the effects of the programme on their reading skills.

26a: Students' Perception of their Reading Skills (pre test)

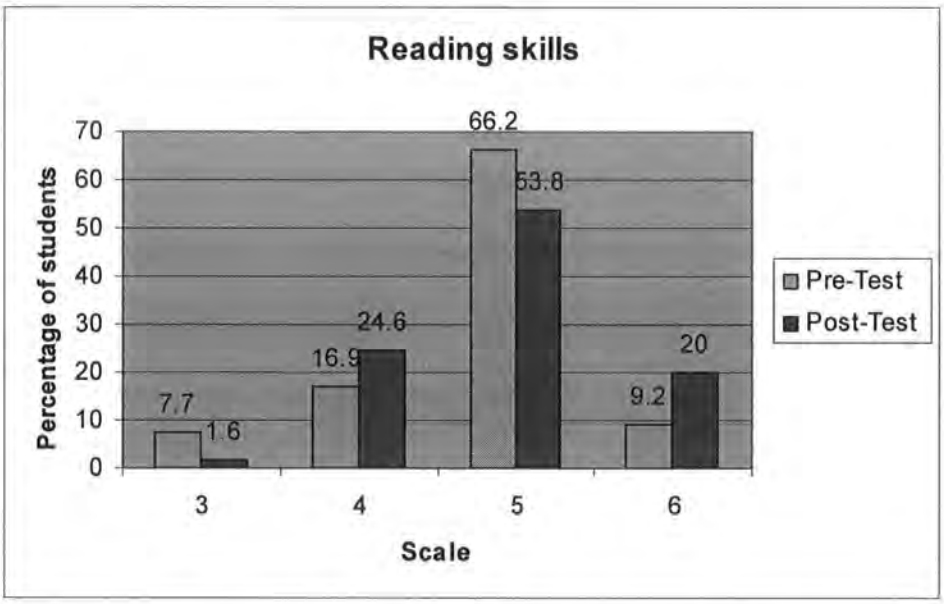


Table 26b: Summary of Students' Perception of their Reading skills

Rating scale	Pre - Test Of Reading Skills	Post - Test Of Reading Skills
3	7.7%	1.6%
4	16.9%	24.6%
5	66.2%	53.8%
6	9.2%	20%

4.2.8B: Communication Skills

The communication skills (Table 27a) data shows that there is a modest increase of five per cent (from 10 per cent in pre test to 15.3 per cent in post test) in the highest scale 6. Students who perceived that they had made some improvements in their communication skills were mostly from the Express stream and the upper secondary students. This was also reflected in their journals and was verified by the qualitative data based on students' involvement in the project work, oral feedback and the learning circles.

27a: Students' Perception of their Communication Skills

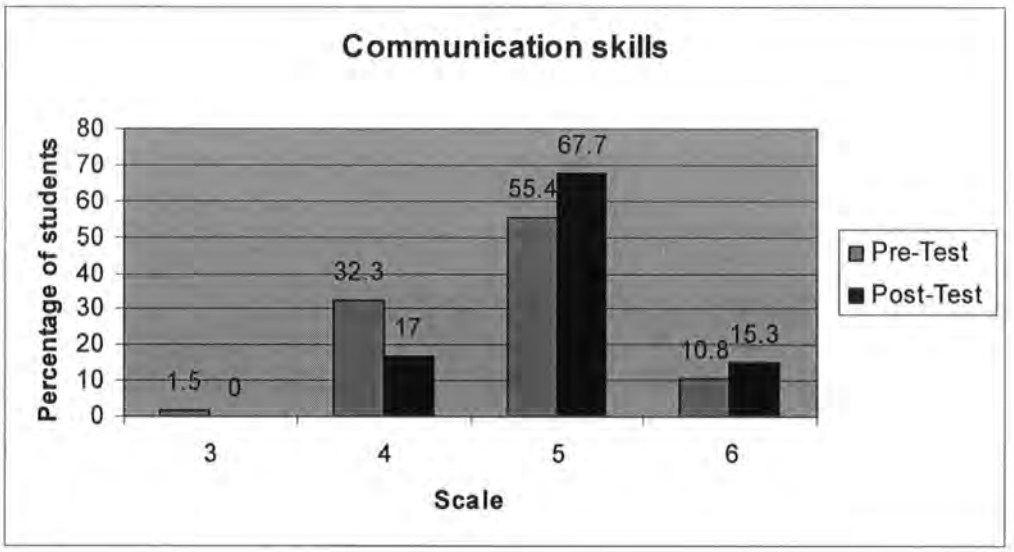


Table 27b: Summary of Students' Perception of their Communication Skills

Rating scale	Pre - Test Of Communication Skills	Post - Test Of Communication Skills
3	1.5%	0%
4	32.3%	17%
5	55.4%	67.7%
6	10.8%	15.3%

4.2.8C: Computer Skills

During the programme, students who were not IT savvy picked up IT skills along the way because they had to use the computers to research on and present their projects. No formal training was given to participants to learn computer skills. Instead, there was a lot of peer teaching among the participants.

Those who had prior skills in using the computer were able to upgrade their skills further. A modest increase of four per cent (from 66.2 in pre test to 70.8 per cent in post test) in scale 5, and three per cent (4.6 per cent in pre test to 7.7 per cent) in scale 6 (see Tables 28a and 28b) show that these participants felt that they have a better grasps of harnessing the computers after attending the reading programme.

Table 28a: Students' Perception of their Computer skills

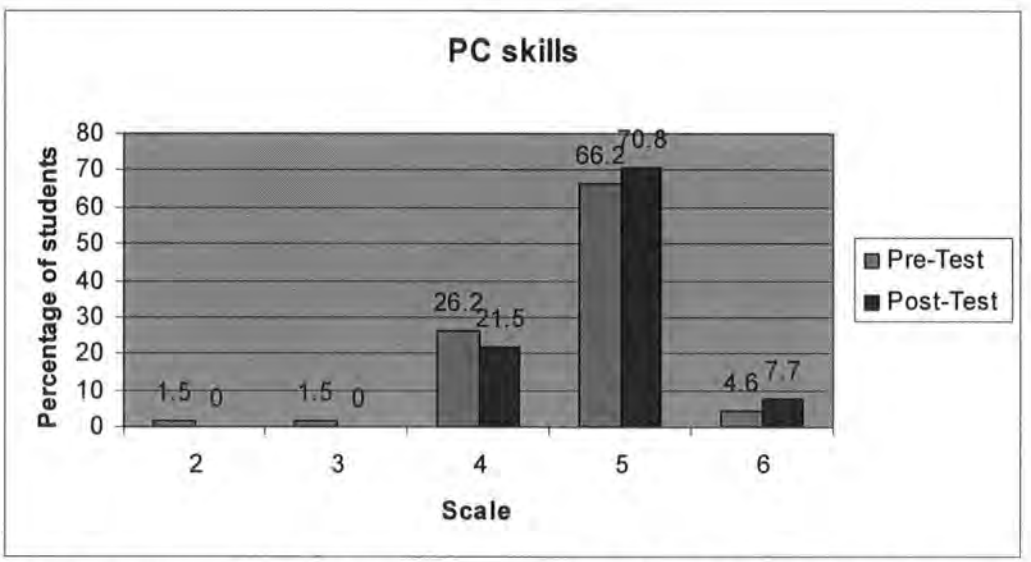


Table 28b: Summary of Students' Perception of their Computer skills

Rating scale	Pre - Test Of Pc Skills	Post - Test Of Pc Skills
2	1.5%	0%
3	1.5%	0%
4	26.2%	21.5%
5	66.2%	70.8%
6	4.6%	7.7%

4.2.8D: Planning Skills

The fourth life skill that was taught to the participants is planning. The course prepared students to plan before they embarked on any project. A programme management software known as the *Kick Start* was used to guide students in planning and managing their project. After the programme, there is an increase in the number of students who rated themselves on the higher scale; especially in scale 5 which registers an increase from 58.5 per cent to 63.1 per cent, and scale 6 which shows an increase from 3.1 per cent to 6.2 per cent. Simultaneously, there is a drop in scales 3 (from 9.2 per cent to 6.2 per cent) and 4 (from 27.7 to 23 per cent).

Table 29a: Students' Perception of their Planning skills

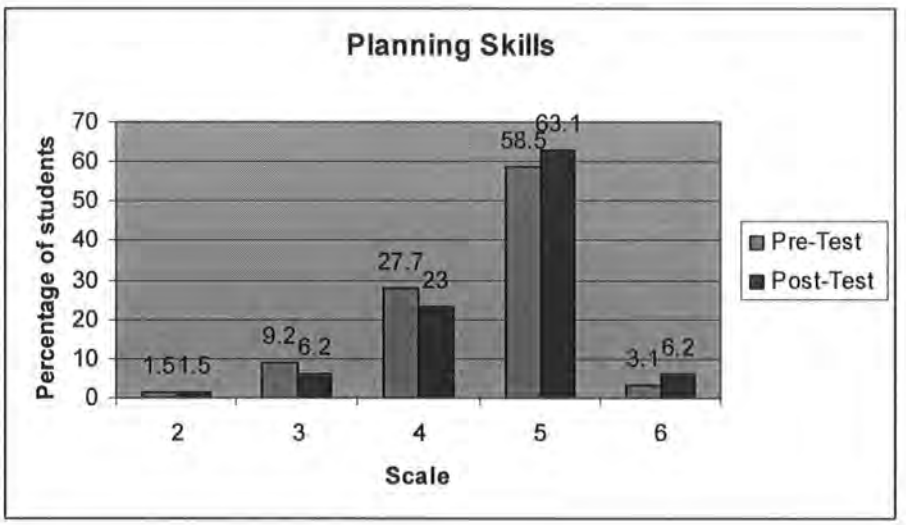


Table 29b: Summary of Students' Perception of their Planning skills

Rating scale	Pre - test of planning skills	post - test of planning skills
2	1.5%	1.5%
3	9.2%	6.2%
4	27.7%	23%
5	58.5%	63.1%
6	3.1%	3.1%

4.2.8E: Thinking Skills

The fifth life skill relates to the thinking competency of the students. The course aimed to help students to attain a high level of critical literacy and competency. It has proven to be very positive and encouraging for the participants. The outcome is seen Table 30a where 64.6 per cent (from the previous pre test 58.5 per cent) of students rated themselves in scale 5. Those who rated themselves in scales 3 and 4 decreased from 10.7 per cent to 6.2 per cent and 26.2 per cent to 24.6 per cent respectively. Participants felt that they had been exposed to different methods and levels of thinking and would be able to apply this skill when carrying out their assigned tasks for future projects.

Table 30a: Students' Perception of their Thinking skills

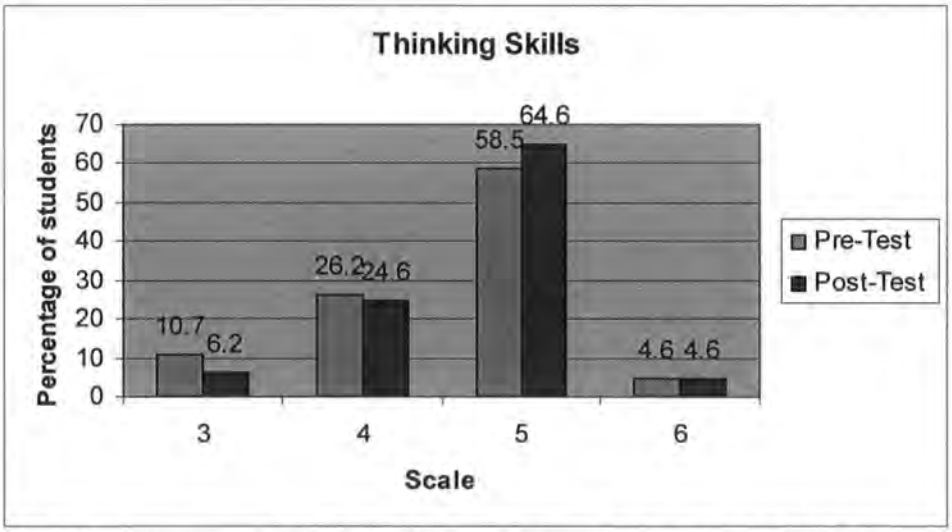


Table 30b: Summary of Students' Perception of their Thinking skills

Rating scale	pre - test of thinking skills	post - test of thinking skills
3	10.7%	6.2%
4	26.2%	24.6%
5	58.5%	64.6%
6	4.6%	4.6%

4.2.8F: Problem-solving Skills

From the data in Table 31a, 69.2 per cent (up from 60 per cent in pre test) of students strongly felt that they are more aware of the problem-solving skills after the project. They rated themselves in scale 5 in the post test. Participants no longer rated themselves in scales 1 (pre test level of 3.1 per cent) and 2 (pre test level of 4.7 per cent).

Table 31a: Students' Perception of their Problem-Solving skills

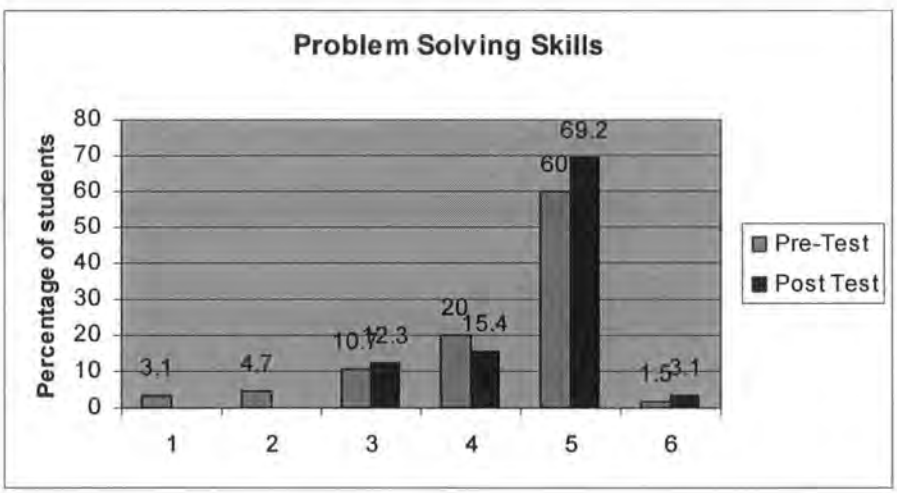


Table 31b: Summary of Students' Perception of their Problem-Solving skills

Rating scale	pre - test of problem solving	post - test of problem solving s
1	3.1%	0%
2	4.7%	0%
3	10.7%	12.3%
4	20%	15.4%
5	60%	69.2%
6	1.5%	3.1%

4.2.8G: Relationship Skills

Relationship skills are essential in students' lives because those skills enable them to interact, socialise and deal with human relations. The data in Table 32a shows that many students had rated themselves better after they had attended the programme. Students no longer rated themselves in scales 2 and 3. Previously 1.5 per cent and 3.1 per cent of students had rated themselves in that scales. There is an increase from 27.7 per cent to 32.3 per cent in scale 4 and from 10.8 per cent to 12.3 per cent in scale 6. The 1.5 per cent of the students that had rated themselves in scale 5 had given themselves a scale of 6 in the post test.

Table 32a: Students' Perception of their Relationship Skills

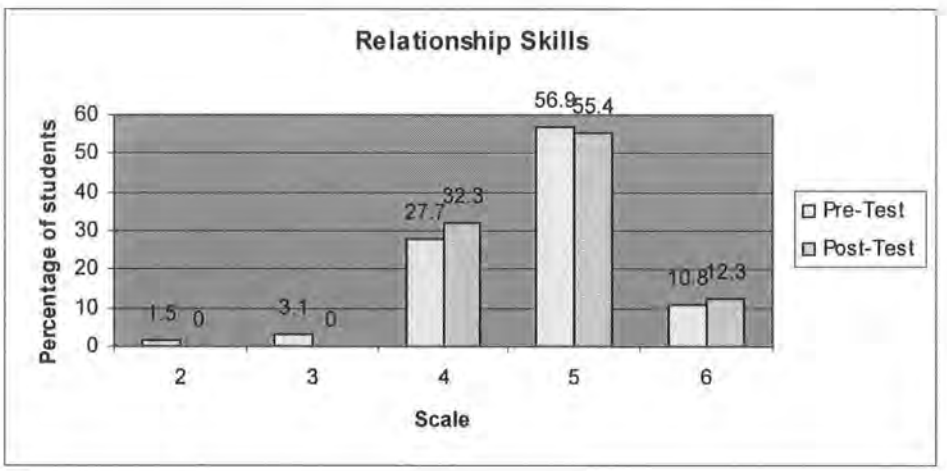


Table 32b: Summary of Students' Perception of their Relationship Skills

Rating scale	pre – test of relationship skills	post – test of relationship skills
2	1.5%	0%
3	3.1%	0%
4	27.7%	32.3%
5	56.9%	55.4%
6	10.8%	12.3%

4.3 Qualitative Analyses of Data

As mentioned in Chapter Three, qualitative data was gathered in addition to the quantitative data for analysis. Observations, interviews, focus group discussions and document analyses using students' learning log and reflective journal, portfolio, trainers' and researcher's reflective journal, feedback pages, and students' project work, critical friends' feedback were collated and analysed.

The final analyses were based on the outcome of the three pilot tests as well as the data derived during the actual study conducted in four consecutive years. The data were sorted out based on themes and research questions. They were then classified under different sub-categories. The final part involved the coding of data, where information was coded or labelled based on categories that were created earlier.

The categories include the description made on the different aspects and subheadings of reflections as written and structured in the students' learning log and reflective journal. The reflective journal was later filled up by participants. Some of the examples of categories specified to analyse data from both the quantitative and qualitative sources are listed below:

- The different aspects of literacy which are reflected both in the pre and post test as well as the LLRJ, for example, the self literacy and technological literacy.
- Students' learning journey and experiences that examined and reflected their level of engagement, interaction, connection and responsiveness throughout the STAR project which covers from the very first stage of

attending briefing, the participation in the two-day residential camp and all the activities organised within that 25 hours, the processes of completing the group project works, their involvement in the Learning Circles, the creation of the STAR reading portal and websites, the planning and the organising of two-day Open house through Learr@School during the iTopia in June, the post-test and debriefing and the final recognition ceremony at the end of the year.

The end results came from the convergence of both sources of quantitative and qualitative data, where analyses and discussions were carried out according to the major aims of the study. The results were also analysed and aligned to the literature and theories discussed in the literature review. The followings are details of the document analyses.

4.3.1 Students' Learning Log and Reflective Journal (LLRJ)

The first two pages of the seven page of LLRJ[53] consisted of explanation on the definition, nature and stages in reflective process. The LLRJ was issued to every participant after they attended the pre test briefing of the STAR, which was held two days before the camp. At the end of the briefing they responded to the first part of the log. Part Two was done after the post test, while part three and four was done through out the implementation of the STAR project which took place from the month of May to August 2002.

During the programme, the teacher-researcher guided the participants while they read through the concepts and processes. This was to familiarise students with

[53] See Appendix 8 for details of the LLRJ.

what they were reading and answered any doubts that were on their minds. The teacher-researcher also explained to them the rationale for carrying out this exercise.

It was followed by the learning log activity whereby students were expected to reflect their understanding on the concepts of winning attitude, problem solving skills, National Education messages, multi-cultural understanding, personal values, technological literacy, goal setting, self literacy and critical literacy. As students underwent the STAR programme, they entered their thoughts in the LLRJ according to the sub headings that focussed on specific content area in the pre prepared, semi-structured training log and reflective journals. Here they were expected to put a tick to indicate their responses on the different components of the STAR project as reflected on page 4 of the LLRJ.

At the end of the whole session, after the post test, the teacher-researcher collated all the participants' responses and evaluated the LLRJ. For example, in the evaluation of the percentage of participants who indicated that they had fully understood the briefing given by the researcher on the STAR objectives, the SWAT team concept and the concept of the LLRJ, it showed that the figure stood at 57 per cent, 54 per cent and 46 per cent respectively.

An estimate of about 25 per cent of participants indicated just 'OK' to denote that they did not really have a full grasp of the concepts. The pupils also have had the tendency to describe their understanding on selected components of the journal by using the word "so – so". This is the colloquial language that the pupils normally use to communicate among themselves. The whole process went

part of the activity or items covered. The presentation of the details of the summary and analysis for the LLRJ collated form the 65 pupils in the actual study are given in Table 33 and 34.

Table 33: Component 1 – Overall Concept of the STAR Project and the Integrative aspect (Please Respond and Tick appropriately)

Activity/Items covered	Fully under-Stood	Fairly under-stood	OK	Still unclear
Part 1				
♦ Briefing on the concept, objective of the STAR project	57%	22%	21%	
♦ SWAT team	54%	9%	35%	2%
♦ Concept of learning log and reflective journal	46%	27%	27%	
Part 2				
♦ Aim of Pre-test and post-test	52%	34%	12%	2%
Part 3				
♦ Concept of attitude	73%	13%	14%	
♦ Reasons for the need to develop winning and positive attitude	64%	16%	20%	
♦ Two component of attitude	68%	11%	14%	7%
♦ Advantages of having good attitude	62%	12%	21%	5%
♦ Impact of our attitude on others	57%	9%	28%	6%
♦ Ways to adjust/renew attitude	58%	16%	15%	11%
Part 4				
♦ Creative ways to problem solving	52%	20%	16%	12%
♦ Link between good attitude, productivity and national development	58%	26%	13%	3%
♦ Total Defence Concept	68%	15%	12%	5%
♦ National Education Messages	71%	8%	14%	7%
♦ Economic Literacy messages	62%	12%	15%	11%
♦ Universality of the achievement- oriented values	59%	26%	9%	6%
♦ Fostering better understanding, appreciation and ties with my friends of different races	67%	20%	10%	3%

The researcher had encountered some problems in motivating every single participant to faithfully enter their reflections in their LLRJ especially in the open ended stimulus questions compared to the questions that require a 'tick' response. Participants from the weaker academic streams claimed that the process of recording every observation, thought and learning processes and

journey that they had undergone was rather tedious. The researcher was aware of their limitations to express in the written form; so negotiations were made to allow them to write in a summarised or 'bullet' form. Instead of writing long essays, they were given permission to draw their thoughts. Nonetheless, even with all the alternatives given, a few of these students were still reluctant to reflect on their experiences, especially those who came from the Normal Technical stream.

4.3.2 The Application of Reflective Thinking and Multi-tiered Process Framework

At this juncture, the *Reflective Thinking and Multi-tiered Process* framework (Surbeck, Han and Moyer, 1991) was utilised to analyse the responses given by the participants. The framework identifies three levels of reflection namely: 'Reacting/Responding', Explaining/Elaborating and 'Evaluating/Contemplating'.

The latter is the highest order of reflection. An average of six weeks of journal writing was conducted but most entries were recorded during the two full-day STAR camp. The remaining was done as and when the students completed their tasks during the school holidays and after the iTopia 2002. Details of the responses given and the analysis made are summarised in the Table 34 below.

74 per cent of the students were simply 'reacting' to the guided stimulus questions given to them. They simply preferred the 'ticking' type of questions rather than the open-ended questions. As stated earlier, those in the weaker academic streams did not like to reflect on their observations. Some of the 57 per cent of the lower secondary students also fell under this level of reflection.

Table 34: The Analysis of Students' Responses in the Learning Log & Reflective Journal (LLRJ)

Level	Reflection	Coding	% of responses
1	Reacting /Responding– Commenting or responding on feelings towards the learning experience, such as reacting with a personal concern about an event. This is just a status reporting	Feelings about lesson (e.g. Bored, interesting) Feelings about teachers/trainers (good, effective) Comments on pace of lesson/teaching methodology	74% (48)
2	Elaborating or Expanding – Provide examples and details such as referring to a general principle, a theory, or a moral or philosophical position. Comparing reactions with other experiences.	Comments on experiences related to lesson content in a holistic manner.	15.4% (10)
3	Reflecting /Contemplating – focusing on constructive personal insights or on problems or difficulties, looking at impact on teaching and learning	Comments on application of content outside lesson scope Suggestions for improvement/criticisms based on logic and reasoning	10% (7) (useful input to further refine the programme

15.4 per cent of the participants were in the second level of reflection where they managed to elaborate on their thoughts. A small percentage of ten per cent managed to attain the highest level of reflections. This group consisted of students mostly from the better academic streams (Express) and from the upper secondary level. They were interested and motivated, and were actively involved in the project. They could be categorised as part of the core members of the STAR project who were involved in the learning circles, and thus were exposed more to the reflective process compared to other participants. These students would like their work to be reflected in the testimonials and school certificates given to them when they graduated from secondary school.

It was at this juncture that the researcher realised that these students were not just part of the sample group and object of study but her collaborators and co-researchers. Two of them had their own personal reflective journals which they had revised on their own; these were relatively more comprehensive than the generic LLRJ provided by the researcher. Based on this 'extra initiative' done by the students, she came to realise that students could be agents of change in the school, especially when they assume the leadership role to control their own learning, contribute to the school and influence their peers in a positive manner.

The researcher also used the tools mentioned above as performance indicators in measuring the effectiveness of the programme. The high quality of students' project work, the creation of STAR website, the development of STAR reading portal by former PYSS students, the initiative and development of the spin off programmes like the service learning, the Job shadowing and the entrepreneurship programme initiated by the students were seen as tools to justify the success of the concept of evidence-based education. Therefore, the conclusion derived is that the criteria of students' engagement, connections, interaction and responsiveness to and in this programme could definitely be used to measure the success of students' quality learning and thus the effectiveness of the programme.

4.3.3 Teacher's Reflections Process

Reflection in teaching generally refers to teachers subjecting their personal beliefs, theories and practices of teaching to critical analysis. Reflection allows teachers to be more aware of their assumptions or personal theories about

teaching and learning, and to re-conceptualise these assumptions to generate new understandings, knowledge and skills (Wood and Martin, 1995). The researcher also kept a journal to record the difficulties and rewards of the action research processes. A summary of the experiences and reflections is listed in Table 35.

Through learning how to systematically conduct research, critically view the researcher's journal reflections, reading the literature and discussion with peers and critical friends, the researcher had really appreciated the importance of reflective practice and applying action research in teaching. Initially she noticed that she did a lot of "actions" and relatively less "research" in her AR study. This was highlighted by her supervisor that she needed to 'balance' her role as a teacher who has the tendency to be too "action-oriented" and to be the researcher to reflect the various aspects of the research skills in the final reporting of the study.

Table 35: Summary of Teacher's Experiences and Reflections

Period	Description of task	Area for Improvement (AFI)
Programme Conceptualisation and development	-to transform the library from a 'warehouse' to a hub that is actively used by students –"full of life" -to develop a reading curriculum which is in line with the MOE's requirements and initiatives -to integrate other disciplines (NE, Life skills) into the programme -to have an end-product/goal in mind where students' work can be showcased -to develop a specially-customised teaching and learning package to meet the multiple objectives of STAR project	• to work closely with student librarians so that I will be able to know and explore why their peers do not make use of the library • to inject fun and teaching other skills like computer and information literacy, this must be tailored to meet the need, interest, ability of pupils • to read or go for Integrated Curriculum workshop because multi-disciplinary or interdisciplinary approach may be theoretically interesting and sound but difficult to carry out, especially if teacher is not trained in the area • -instead of directly exhibiting students' project at a national event, their work should be exhibited in school first – to get feedback
Projects Implementation And Review	- random sample of students from different streams and levels -student sample of 65 maybe too big, especially for activities after the camp -duration of the camp is sufficient; activities are put close together	• students of different streams have different interests, group cooperation may be compromised • smaller sample size, limited to one academic stream in one year, for e.g. Sec 3 NA students only • students may find that short breaks between lectures affect their concentration in subsequent lectures
Follow-up Activities	- Follow-up activities such as job shadowing, service learning and entrepreneurship are interesting for students to take part and go through the process themselves, but they have o be initiated by them or if possible incorporated with the school's Community Involvement Programme (CIP) -some of the students graduated by the time the follow-up activities are implemented, thus, difficult to organise the activities with them	• activities required a lot of networking help and support from companies • future STAR project students are probably going to be students from Sec 1, 2 and Sec 3, rather than Sec 4 who are graduating students as they are busy with the preliminary exam, national examinations, N and O level.

4.4 Conclusion

The implementation of the STAR project and the participation in iTopia 2002 had brought many positive effects to the school in general and the students in specific. The outcome and impact of this programme will be analysed based on the following categories:

1. Focus on the Reading programme
2. Focus on the school
3. Focus on the students' learning outcomes
4. Focus on teacher's experiences as a researcher

4.4.1 Focus on the Reading Programme: Programme Effectiveness

Based on the checklist adapted from Knuth and Jones (1991), there are seven criteria that could be used to assess the effectiveness of reading programme and instruction. These are: vision of learning, curriculum and instructions, assessment and grouping, staff development, involvement in the community and policies for students at risk. Using this checklist as criteria to assess at the micro level, the practices of the existing and alternative reading programme (refer to Table 35), the researcher could conclude that the latter programme did have a positive impact on her students, the school and herself. Students had not only developed interest in reading but gained knowledge of and acquired skills in writing, thinking, researching, presenting, communicating, collaborating, socialising, and most importantly, making meaning out of their lives

However to critically analyse the outcome at the school or systemic level, the conclusion might not be accurate. For example, for the criteria on the vision of learning, it was only shared by the researcher and participants who were

involved in the programme. And even among these 65 students, not every single one shared the same vision and displayed the same level of commitment. The actual number of students who were fully engaged and contributed the most was about 30, less than 50 per cent of the participants. These 65 students constituted only 6 to 7 per cent of the total students' population of 1300. For any instructional programme or initiative of this nature to be effective and have an impact on the students, it should involve the whole school community—the Principal, teachers, students and the non teaching staff who provides the technical support.

4.4.2 Focus on the School

4.4.2A: Operationalisation of MRL and School Vision

This study has helped in operationalising the PYSS MRL vision of trying to make the library the learning hub of the school. Most of the reading activities, research, the development of E-portal and the creation of the Star website were conducted in the Students' Centre within the MRL.

4.4.2B: Aligning of the School Strategic Thrust

This study complements PYSS' strategic thrust of promoting the "reflecting and thinking" culture. Though evidence of students' use of inferential skills, evaluating and synthesising skills as reflected in the project work and the feedback given in the journal were very few; students did respond to the first level of reflection. Perhaps, the reason why many students failed to make contemplative and constructive comments is because they were simply audio or kinaesthetic learners — giving feedback and providing responses in the form of writing might not be their preference. The other possible explanation could be

because they lacked proficiency in the English language. These constraints could be further researched in future studies. It would be interesting if differences in responses could be captured to reflect different students across academic streams, levels, ethnic group and gender.

4.4.2C: PYSS as IT cluster centre

The optimum use of the library and its resources during the programme; the sharing done at the school, cluster and ministry levels; and the development of integrated curriculum by the teacher-librarian have further enhanced the role and the profile of the MRL in the school. This is congruent with PYSS' status as the IT cluster centre by utilising the resources for the benefit of the school as well as the cluster.

4.4.2D: Strong Collaboration Among Stakeholders

Students working in partnerships with their peers, alumni members, teachers, members of PSG and external trainers were and are critical and pivotal during the implementation of the programme and in this study respectively. Learning and being supported by experts within and outside the school provide valuable opportunities for students to develop different skills and ways of thinking. Exposure to different professionals specialising in different fields, helped to 'open the eyes and the minds' of the participants (as claimed by them) and provided them with a 'reality check' of what is happening outside the school.

PSG members were very happy that they could contribute and provide value added services to the school in a national event like iTopia. Through the STAR project, they could see their children's direct involvements in school activities

and thus, provide the necessary moral support needed by both school and students. Former students who were studying in Temasek Polytechnic returned to school to help the school and participants in developing the E-learning portal. That in turn, allowed them to apply what they learnt in the polytechnic.

4.4.3 Focus on the Students' Learning Outcome

4.4.3A: Students' Empowerment

The programme and its follow-up activities fostered creativity and imagination in students through reading, writing, editing, and problem solving. The current batch of students, with the help of the former Ping Yians, developed the E-reading portals, created the STAR website and organised the open house and exhibitions.

4.4.3B: Benefits of Working with Technology

Both the researcher and students benefited immensely from the extensive use of technology. It facilitated the process of obtaining and sharing of reading materials and other related resources; and contacting academic or experts throughout this study. Technology had allowed participants to connect with anyone that they wanted to work with during the programme through electronic mails.

This had resulted in greater collaboration among students, between students and the researcher and, also with other participants such as members of the alumni and the PSG. The experiences of the researcher and her students are consistent with the findings of Berston and Moont (1996) and Gruber, Peyton and Bruce (1995). They claimed that computers encourage group learning and collaborative

students in networked classrooms tend to prefer working together to pool their knowledge and skills in the search for information, navigating world wide web or 'www' sites and data bases.

The multi-modal and iconographic nature of the 'www' and CD-ROMs appeal to learners of all ages by mediating the difficulty and apprehension many students experienced. The ability to import, download, drop and drag text and imagery from the global library of information creates new skills, processes and multi-modal forms of 'textual' production that encourage interdisciplinary reading, research and understanding. This is consistent with the objective of this study, i.e. to create greater awareness among students of the new skills and competencies that they are required to learn and master in this new millennium. As they will be workers of the knowledge based post-industrial economy, they need to learn to be adaptive, flexible, creative and risk takers.

4.4.3C: Boosting of Students' Morale

Participation in the national iTopia event organised by the MOE boosted students' morale as they were very eager to showcase their hard work to the local as well as foreign visitors. Their involvement in the STAR project had allowed them to be selected to participate in a prestigious event. Greater collaboration among and from everyone—STAR participants, alumni members, members of the PSG, co-presenters and emcees and the technical staff—was achieved during the preparation of and involvement in the event.

4.4.3D: Project-based Learning

Students who were keen to do follow–up activities underwent three project-based learning. One was the Service Learning where participants visited a 'Before and After School' Centre (BASC). They read books to the disadvantaged children and coached them in reading and writing. The second group of participants did job shadowing. With the assistance of a PSG member, the students managed to visit three different companies dealing with three different industries as part of career guidance awareness programme. The third group of students tried their hands at entrepreneurship by producing motivational posters, chart, bookmarks and other small items to be sold to their friends and teachers. They applied what they had learnt about winning personality and attitude and shared those messages with their peers in the school.

4.4.3E: Students' Creativity

The STAR project had encouraged the participants to be creative. Students had the flexibility to read different genre with the main theme of Power, pursue project works that interest them and present their chosen products during iTopia.

4.4.3F: Independent Learning

Students' ability to learn independently was evident during the programme. They surfed the Internet, did their E research and used CD-ROMs to complete the task sheet and project work. This is because of the following reasons:

1. The flexibility of the programme: students could do their work in and outside the school. Most students chose to continue their work at home or in the neighbourhood's regional library;

2. The collaborative nature of the assignment: students felt comfortable working in a group which led to peer teaching and coaching.

4.4.3G: Students Function as "Assistant Researchers" and Co-partners

Students' views, comments and feedback were sought for the followings:

1. Selecting the themes, titles, materials to be used for their reading;
2. Consulting the manner, time and venue of the reading programme;
3. Negotiation of learning and assessment tasks - deciding on the type of project-based assignments as part of the assessment on students engagement on reading and follow-up activities;
4. Helping to key in the pre and post test data during the pilot tests which was done during the school holidays;
5. Assisting in organising the STAR camp and the iTopia exhibition;
6. Preparing all the PowerPoint slides for presentation purpose; and
7. Organising a social gathering to celebrate the success of the project where the official thank-you ceremony was held and certificates of participation were given by the school principal.

At the end of the STAR camp and iTopia 2002, the researcher realised that the project could not be implemented without the collaboration of the SWAT team members. She deduced that students are also a potential agent of change in the school context. Although teachers are often reminded that they are agents of change—to take the lead to bring about changes, reforms and innovations in the school — students can also bring in fresh new ideas to the school.

4.4.4 Focus on Teacher's Experiences as a Researcher

4.4.4A: Top-down versus Bottom-up Initiatives to Reform

Based on the researcher's experiences throughout the four years of continuous attempt to initiate the bottom-up initiatives and reforms in the school curricular, she found that it was rather difficult to sustain the effort as the dynamics and politics in the school setting kept on changing. She observed that the 'top-down' model of school worked in the school, especially if initiatives came from the principal or the vice principal. This conclusion is consistent with the observation of Luke (1998). It can be frustrating to a classroom teacher who wants to initiate a big 'wave' of change in the school. Perhaps, the researcher should be satisfied with making small innovations that will have a "rippling effect" on the school community.

4.4.4B: New Role, New Challenges of Teachers in the New Era

There is a need to look at the new role of teachers when initiating any forms of intervention or group dynamics. Teachers must have the prerequisite knowledge to initiate such programme. This requires professional development activities. Teachers must not be linear in his or her perspective on the process of teaching and learning. In this context, teachers must not just possess and understand a systemic perspective and world view to address students' concern, but more importantly, need to internalise and operationalise these attributes and behaviour in their daily practice.

To illustrate this point clearly, the researcher relates her personal experiences in this study. She did not see the attempt to improve the reading practice as just her CCA or her MRL activity, but to look at the wider perspective by taking into

consideration students' needs and problems; the school's priority as reflected in the school's mission, vision and strategic thrust; and the national and local challenges that would affect the students. With this bigger picture in mind and wider perspective, she was able to look into the issue of reading interest and motivation at the systemic level and used appropriate approach to address this issue.

4.4.4C: Relational Understanding versus Instrumental Understanding in Programme Development and Management

Based on the researcher's observations and experiences, teachers routinely carry out various school activities for their students without fully understanding the rationale of the project, the teaching and learning theories and principles, and the group dynamics and processes. Even if they do, it is an instrumental understanding which reflects a rather superficial knowledge of the issue. By going through the process of this study — which includes reading, feedback given by critical friends and thesis supervisor — the researcher concludes that if a teacher wants to conduct a similar programme, he or she should have the understanding of the importance of acquiring theoretical knowledge (*relational understanding*) as well as practical skills (*instrumental understanding*).

The researcher becomes more aware of the importance of having relational understanding as opposed to instrumental understanding in understanding the "what" and the "why" of carrying out changes and programmes in the school context. This allows her to be professional in her teaching career—appreciating fully the whole process of teaching and learning and applying theory and practice for maximum results in students' learning.

4.4.4D: Using Reading Checklist as an Evaluation Tool

The researcher used the reading checklist provided by Knuth and Jones (1991) as another tool to assess the effectives of the reading programme under the STAR project. There are six criteria identified by Knuth and Jones that reflected the best practice of a reading programme and instruction. When a comparison is made between the old reading programme and the STAR programme (as summarised in Table 36), the latter met most of the identified criteria.

Table 36: Checklist for Effective Reading Programme (adapted from Knuth and Jones, 1991)

No	Area Of Concern	Performance indicators and best practices	CRP	ARP (STAR)
1	Vision of learning	• Meaningful learning experiences for students	√	√
		• High enjoyment of reading, writing and learning		√
		• Restructuring to promote learning in the classroom	√	√
		• A community of readers in the classroom and school		√
		• Alignment to the school vision and values		√
		• Teachers/administrators committed to achieving national aims.	√	√
2	Curriculum and instructions	• Curriculum that calls for a diversity of real literature and genre, a repertoire of learning strategies and organizational patterns for text passages		√ √ √
		• Collaborative teaching and learning involving student-generated questioning and sustained dialogue among students and between students and teachers		√ √ √
		• Teachers building new information on students' strength and past experiences	√	√ √
		• Authentic tasks in the classroom such as writing letters, keeping journals, generating plays, author conferences, genre studies, research groups and sharing expertise	√	√
		• Opportunities for students to engage in learning out of school		√
		• Real audiences (for example, peers, community members and other students		√
		• Homework that is challenging enough to be interesting but not so difficult as to cause failure		
		• Appreciation and respect for multiple cultures and perspectives		
		• Rich learning environment with places for students to read and think on their own		
		• Instruction that enables readers to think strategically		
3	Assessment and grouping	• Performance-based assessment such as portfolios that include drafts and projects		√
		• Multiple opportunities to be involved in heterogeneous groupings, especially for students at risk	√	√ √
		• Public displays of student work and rewards		

No	AOC	• Performance indicators and best practices	CRP	ARP (STAR)
4	Staff Develop -ment	• Opportunities for teachers to attend conferences and meetings for reading instructions	√	√
		• Teachers as researchers, working on research projects		√
		• Teacher or school partnerships/projects with colleges and universities	√	√
		• Opportunities for teacher to observe and coach other teachers		
		• Opportunities for teachers to try new practices in a risk-free environment		
		•		
5	Involve-ment of the commun ity	• Community members' and parents' participation in reading instruction as experts, aides, guides and tutors		√
		• Active involvement of community on task forces for curriculum, staff development, assessment and other areas vital to learning		√
		• Opportunities for teachers and other school staff to visit informally with community members to discuss the life of	√	√
		• the school, resources, and greater involvement of the community.		
		•		
6	Policies for students at Risk	• Students at risk integrated into STAR programme	√	√
		• Activity that display respect for multiple cultures and role models		√

CHAPTER FIVE

CONCLUSION AND IMPLICATIONS

This concluding chapter presents a summary of the study and its main findings. It also highlights the findings of both intended and unintended outcomes. It puts forward the positive educational implication of the findings and recommends areas for further research.

5.1 Summary

This study attempts to look into the reasons for PYSS students' lack in interests or motivation to read. It tries to identify the factors that could promote interest and motivation in reading among the non readers. This study is carried out in conjunction with the Media Resource Library's activities because the researcher wants to improve her duties as a teacher-librarian.

The ineffectiveness of the current enrichment reading program propelled the researcher to carry out a collaborative action research. Earlier surveys conducted by the library unit showed that the PYSS upper secondary students did not do independent reading outside curriculum time. Moreover, they even failed to read the recommended school textbooks. This study sets out to develop an alternative multi-media and multi-literacy reading programme called STAR project; examines the impact of this multiple dimension of literacy on students' reading interest; and tries to find ways to motivate students to read by capturing their unique experiences as participants as well as collaborators and partners in this study.

As mentioned earlier, this school-based action research was conducted in four stages. The pre-intervention stage examined the existing reading practices in PYSS and investigated the reasons as to why students were not keen to actively read. The second stage explored the factors and the context that would motivate the students to read. A review of literature on reading was done, and interviews and discussions with students and teachers were carried out in the second stage too.

Based on the research findings of both stages, an alternative multi-media multi-literacy reading programme was developed and implemented in stage three. Finally, the practical intervention stage tested out the implementation of reading programme through a series of pilot tests and the main study through the STAR Camp whereby students' perceptions, behaviours, interactions, engagement and reactions were observed, monitored, reviewed, reflected upon, analysed and reported.

The research subjects consisted of 65 students, randomly picked from the Lower and Upper Secondary level: Secondary Two, Three and Four (and Five) students from three different academic streams, namely the Express, Normal Academic and Normal Technical. Action Research was used as a research tool in this study and combinations of the following methods were used for data gathering and data analyses purposes:

1) Qualitative approach which consisted of:
    a. Students' task sheets
    b. Group project work
    c. Learning Log and Reflective Journals

d. Interviews

e. Focus Group Discussions

f. Camp evaluation and feedback (Refer to appendix 10)

g. Teacher's and Trainers' Journals

h. Observations

i. Annual school and departments reports;

2) Quantitative method which comprised of:

j. Pre-Test data

k. Post-Test data

In general, this study shows that the STAR project had met some of the multiple aims set out at the beginning of the study. Students, teachers and the school benefited significantly from the implementation of the STAR project — students' awareness on the importance of reading was enhanced; they were exposed to different aspects and dimensions of literacy that are necessary in the KBE era; and they derived meaningful aspects of life beyond school.

More importantly, this study has perpetuated genuine collaboration between the teacher-researcher and students; and in the process, boosted their morale and self esteem. The strong bonding forged between teacher-researcher and students, especially among the ten core members of the LCs, has resulted in a quality relationship that has impacted both over the years.

Below is the summary of results which was based on the research questions obtained through the quantitative and qualitative analyses of data.

5.1.1 Is the current reading enrichment programme under the MRL effective in achieving its aim of stimulating reading interest among them?

To answer this question, the researcher conducted an interview with the HOD IT, three teacher-librarians who carried out the programme and 18 students from Secondary Two and Three who were involved in the programme. In addition, she also referred to the annual report of the MRL reading programme prepared by IT Department Head. Based on the combination of data gathering methods as mentioned above, it was found that the current reading programme was not very effective because of the following reasons:

i. Rigidity of time: the reading programme was conducted between 2:30 and 4:30 PM for lower secondary students and 3:30 to 5.30 PM for upper secondary. Sometimes, the timing clashed with other activities like tournaments, remedial classes, Community Involvement Programmes and other school-based activities.

ii. Mandatory system or compulsion: it was made compulsory for every student to go to the library every week on rotation basis and students were "forced" to read books that were available in the library, books of not their liking; which led to subtle resistance among some students, especially the upper secondary students.

iii. Boredom: students felt bored because the reading sessions were limited to the discussion of limited number of books written by local authors. Consultation was not made between the teachers-in-charge and students involved over the type of genre preferred by the latter.

iv. No linkage: students did not perceive the enrichment programme organised by the MRL as something desirable or that benefited

them academically. No link was established between reading activities and the classroom's instructional programme. Consequently, it was perceived as just another MRL activity where each student was expected to undergo four hours of reading per year.

v. Assignments: students showed some reluctance in doing the assignments given to them, i.e. doing a book review or summary within a two-week time frame after the scheduled reading enrichment programme. Many resorted to copying from their friends, and some merely copied from the back page of the book or the synopsis and added a few extra lines of their own.

The above findings concur with Yin (1998) who reported that reading for lifelong pleasure is difficult to achieve among Singaporean students. In terms of the factors that contribute to motivation in reading, the findings of the first phase of action research to a certain extent supported the importance of selecting suitable text for adolescent readers, the need to identify the environment or context that promotes reading and engagement (Guthrie, 2000) and the use of multi-media for young learners (Reinking, 2001).

It was deduced that based on the above findings, the current reading programme under the MRL was not effective in achieving its goal of stimulating reading interest and motivation among PYSS students. Using the checklist for effective reading programme presented by Knuth and Jones (1991) in the previous chapter— which reflects the best practices of a reading programme — the

researcher made a comparison between the current and the alternative reading programme.

The comparison was made based on the issues of vision of learning, curriculum and instruction, assessment and grouping, involvement of the community, staff development and the inclusion policy of bringing students from different academic streams into the programme. There are some similarities between the criteria listed in the checklist with that of Guthrie's proposals in his model of reading engagement (2000). Having explored the question of 'what' the causes and possible factors are to create a conducive climate that might promote reading interest and engagement among reluctant students, the researcher now attempts to answer the second question: How to stimulate interest and motivation in reading?

5.1.2 How to develop an alternative reading enrichment programme for the non-readers or reluctant readers among the adolescents?

Developing an alternative reading enrichment programme for the non-readers or reluctant readers among the adolescents is not an easy task because the problems and concerns of reading among adolescents are not explicit. Most secondary school teachers assume and expect all students who passed the PSLE to possess reading abilities and basic functional literacy which includes writing, speaking and listening.

Being a new staff, with a new set of responsibilities, the teacher-researcher faced a rather difficult task in initiating this study. She realised that any attempt to re-create context and setting that would have the effect of bringing about change

and reforms in her teaching practice must be done 'diplomatically' so as not to be misconstrued by others as fulfilling a personal agenda. It had to be aligned to the school tradition, practices, emphasis, values and its culture. The following actions were taken for this purpose:

i. Started posting the idea of introducing online or screen based reading as part of the MRL reading programme through the Electronic Staff Suggestion Scheme.

ii. A WITs team led by the researcher was formed to address the issue of low borrowing of library materials from the MRL.

iii. A systematic and multi-level need analysis was carried out to establish the causes of non reading among upper secondary students; followed by a series of consultation and negotiation with affected students.

iv. Prepared a concept paper of aligning the school's programme with students' needs to be presented at the SMC level for approval.

Reactions from the people involved were mixed. On one hand, they welcomed the 'bottom-up' innovation, but on the other, they were worried about the implementation of the programme such as the monitoring factor and, the breaking of the MRL tradition and practice of having the weekly scheduled reading activity in the library. These issues needed to be addressed before any new programme could be implemented. Fortunately, the HOD IT was a risk taker. She had allowed the researcher to not follow the MRL reading routine. However, this was not favourably viewed by other teacher-librarians who perceived the former as someone who likes to initiate "innovation" at the department level.

However, after much persuasion at the management level, the alternative reading programme was implemented. Having identified the causes through various methods of internal scanning, the researcher continued with external scanning, which included reading of existing literature on reading interest and motivation and development of literacy programme by the MRL.

Based on this second phase of action research, a comprehensive concept paper was conceptualised which took into account the students' profile, the schools' dynamics and needs, and the content outline of the alternative reading programme. This then led to the third research question: What are the factors and issues to consider, since the process of developing and conducting an alternative reading programme by a single teacher is not an easy task?

5.1.3 What could be the factors that stimulate reading among students? Would the development of a multi-media multi-literacy reading programme stimulate interest in reading among students?

It was at this juncture that the Guthrie Model (2000) was used as a framework to develop a reading program which coincided with the context that the researcher was in — after taking into the consideration the four factors[54] that stimulate reading as identified by Palmer, Codling and Gambrell (1994) and the issue of emotional and situational interest by Kinstch (1980).

Besides the issue of interest of text, theme, concept and genre, the researcher found that another factor that helped in stimulating reading interest is in the way

[54] They are *Prior Experience with books, Social Interactions, Access and Choice.*

the reading is conducted. The researcher leveraged on technology to get students to do screen based reading in addition to print based. The use of multi-media stimulated students' interests not only in reading but in completing their tasks through project based learning as they seem to be very comfortable using technology.

The rationale for using technology was two fold. One was to engage students to be interested in reading by giving them choices and varieties in the mode of reading, resources, materials and topics while at the same time introducing them to the other aspects of literacy as mentioned in Chapter Two. The second was more for the researcher as she could also learn the multiple uses of technology from the IT savvy students themselves. This in turn led to the emergence of learning communities among the students and between the researcher and her students.

The importance of computer and digital literacy cannot be ignored because they are part of the basic competencies of the 21st century workplace. The real life experiences created in the classroom are attempts made to provide meaning in learning to the students.

According to Guthrie's model, **real-world** interactions refer to learners' sensory and personal experiences; and the main role of these real-world interactions is to evoke intrinsically motivated behaviours. This condition is a motivating context for text-based learning. When the project ended, many students were motivated to read as seen in the positive changes in their attitude as analysed in Chapter Four

The concept of intrinsic motivation states that students must possess positive values in order to be motivated and engaged readers, and successful students. Based on the findings as described in Chapters Three and Four, the students showed keenness in reading screen based materials and were able to research on various topics that assisted them in completing technology-related tasks.

They completed the task sheets and project based assignments which were used as exhibits in the iTopia 2002; developed the in-house E-Learning portal with the help of former students who were studying at Temasek Polytechnic; created the STAR website; and produced various products and artefacts that were displayed during the open house. Participants of the STAR camp and other PYSS students posted book reviews and summaries on the STAR website and e-newsletter to be shared with fellow students. Participants' works were also displayed in the 'Read, Review and Share' column of the website. Students were further motivated to write and read when they saw their works being displayed for public viewing.

5.1.4 Could the teaching of the multiple literacy which is reflected in the multiple aims of the school curricular, be done without overloading the students and teachers, while at the same time, optimising the learning experiences of the students?

This was possible through the operationalisation of the concept-based Integrated Curriculum framework used in this study. The concept of POWER was the parameter used for students to do their reading and work on other related and relevant assignments. It was weaved into the central theme "New me with new literacies" so that students could attain a holistic view and an understanding of the project. This would give them a sense of direction, ownership and partnership with the researcher as they participated in this project.

The researcher's six years of experience as a curriculum writer with the Ministry of Education had helped her in designing this concept-based integrated curriculum which included different disciplines using different pedagogy and media to fulfil the aims of the STAR project.

As mentioned earlier, the curriculum was designed with four stages, namely: a) ***finding meaning*** — something that trigger students' minds based on their prior knowledge or schema; b) ***thinking through*** — where students are required to learn and understand the issues; c) ***applying and internalising*** — in which students are to apply what they have learnt and to practise the knowledge in everyday activities; and d) ***exploring and reconstructing*** — the last stage requires students to explore further and to find new ways to understand issues.

This study adopts a non-formal assessment using the project-based learning through group work which provided opportunities for students to collaborate among themselves through peer teaching, and thus share their learning experiences. As such, the learning curve for each student varies according to his or her entry point for each dimension of the literacy.

Based on students' feedback, this multi-literacy, multi-media programme had made a positive impression on them. Below are some extracts of the statements made by participants (students of PYSS) verbally through the feedback session as well as reflected in their journals:

- *"The two-day camp has made me see the big picture, to see things at a higher level, in a more complete way";*

- *"The presentation given by various speakers during the camp convinced us of the need to have new set of literacies for the new millennium";*
- *"The explicit link you made in relation to the different subjects in STAR project has helped us to be more aware of the interconnectedness of different bodies or branches of knowledge that we learn in school";*
- *"I feel good and enlightened that almost everything I do such as sending email to and chatting with friends at msn can be defined as reading; and this make me feel not so guilty about getting myself glued to internet.";*
- *"This whole journey has broadened my world about school and education";*
- *"I am proud to see my work being displayed for iTopia, 2002";*
- *"The STAR project enables me to obtain the FULL picture of the process of learning, which involves not just Knowing, but also Understanding and Doing, For example, I now know what is the real meaning of attitude, I could understand how my attitude could affect me positively or negatively and finally the need for me to apply what I have learnt to my life";* and
- *"The camp has provided us with the opportunities to collaborate and make friends with students from different classes, levels and academic streams".*

Feedbacks from other participants given in this study during the iTopia are also presented below.

- *There were a lot of team-work, hard work, commitment required to participate in this national event like itopia. You all had done it!* (Head of Department IT)

- *I learn to be more professional in my work as I need to present and showcase them for public consumption*
  (a former student, member of the school alumni)

- *We were exposed to the wide buffet of educational initiatives in one school alone, and that is amazing*
  (a group of educators who formed the foreign delegates taking part in iTopia 2002, and had indicated their choice to come to our school for the Open house through Learn@School.)

- *This iTopia provide wide opportunity for teachers and students to interact at different level outside the classroom context*
  (a Trainee teacher from National Institute of Education)

- *Students were proud that they were able to rise to the occasions and put their best performance for that two days at least.*
  (a comment and observation made by parent volunteer)

- *We considered ourselves very lucky to be chosen and given the opportunity by the ministry to feature our school-based programmes in this educational exhibition which reflects the milestone achievement of MOE of such a magnitude.*

  (a statement by a member of the school management committee)

In conclusion, this study has proven that it is possible to teach multiple literacy which is reflected in the multiple aims of the school curricular without overloading the students and teachers, while at the same time, optimising the learning experiences of students through the development of a systematic and well-designed concept-based integrated curriculum.

The downside of this study is that it is a time-consuming process. The abilities to conceptualise and translate the repertoires of knowledge and skills require mental stamina and commitment to follow through the development and the implementation of the programme. The toughest part of the study is monitoring the 'quality' learning of each student. This type of work is almost impossible to be carried by one teacher-researcher alone.

5.1.5 What are the performance indicators use to measure the effectiveness of the programme? Can the criteria of engagement, connections, interaction and responsiveness be used to measure students' quality learning?

Another context used in the Guthrie model is the **autonomy support** given to students to develop independent reading and learning. This autonomy support refers to the teacher's guidance in helping students make choices among meaningful alternatives in texts and tasks to attain the knowledge and learning aims. Throughout the implementation of the programme, students had ample

support from the researcher and teacher-in-charge, including the trainers. This had allowed students to be self-sufficient and made them more independent because they felt 'empowered' as they were consulted — they had a voice in the negotiation process and considered themselves as partners in the project. When students were given great support and freedom in choosing from a wide selection of texts, sustained reading among them increased.

As discussed in Chapter Three, the effectiveness of the programme was analysed by using data obtained from both qualitative and quantitative methods. The Triangulation method was utilised to ensure that all data were captured, validated and cross-referred to establish reliability and credibility. Since this study was more relevant to the students' perceptions of their own personal changes after the camp, their reflective journals and learning logs were exceptionally useful in complementing the pre and post test data from the quantitative method used to measure the effectiveness of the programme and its impact on the learning outcomes of the students.

Besides using those tools, students' task sheets, group project work and other ephemeral artefacts were used as evidences of students reading interest, motivation, engagement and learning outcomes. This study had not only made use of the observations by trainers and teacher-researcher, but also the analyses feedbacks and evaluation given by parent volunteers and members of the parent support group as well as fellow teachers who attended the cluster sharing, Teachers Network conference and hundred of educators who took part in PYSS Open House as delegates of iTopia 2002.

Discussions on these performance indicators have been covered in the previous chapter. It is suffice to conclude here that there is an alternative assessment that could be deployed to measure students learning by collating all the products and documenting them in the form of portfolio. The Design and Technology (D&T) students are familiar with the concept of portfolio, and thus, presented this to the researcher as their final product. The researcher had used the recycled big folder from the D&T department to put each group's project work for public display. Though attempt was made to introduce portfolio assessment, not every student could subscribe to this. Since this study is part of the enrichment programme, the researcher did not insist on the use of portfolio as it did not affect the main aims of the study.

5.1.6 Can the researcher's experiences help fellow practitioners to conduct school-based Collaborative Action Research? Based on the implementation of this bottom-up initiative, what are the learning points that help or impede innovations and reforms in a school?

The researcher had used WITs as a tool to look into the reasons for the low borrowing of books and other materials from the library. She found that while this is a useful tool, it was too "technical" with many steps and fixed procedures to follow. There is no flexibility in this tool as compared to Action Research. However, to use Action Research effectively as a research tool to improve teaching practice, it is critical for practitioners to fully understand the concept and processes of Action Research; and possess the ability to be critical throughout the reflective practice.

After undergoing the research process while carrying out this study, the researcher would like to recommend that fellow practitioners who are keen to conduct an AR should attend the relevant courses that would enable them to

apply the theory to their respective research. To conduct a similar study that involves the development of an intervention programme, teachers should be familiar with other bodies of knowledge. To name a few examples based on this study are: programme design and development, curriculum implementation and group guidance.

Conducting a bottom-up initiatives that sustain and maximise the learning outcomes of our students require not a teacher effort, but a group of like minded teachers who share the same drive, mission and passion and willing to take the leadership to bring about a change and provide the value-added service to their students

Ideally, it should be a whole-school approach that promotes the philosophy and the culture of innovation for excellence, a culture that promote best practises in teaching and learning. In the context of this study, a committee could be formed to champion and drive this programme and it must be fully supported by the school principal and management. The collegial assistance given by the whole school community including parents, alumni, other stakeholders have brought about some success to this research project.

Other critical factors that would help innovations in the school to thrive are the availability of professional time and space for teachers to do the reflective practices and attending relevant training and courses. Secondly, there must also be sufficient funding to sustain the costs of running such programmes. Thirdly, there should be a multiple system of reward and recognition for all participants, including the students, teachers and parents who are involved in such a

programme. The STAR project had taken all these factors into consideration and had given due recognition to all the key players.

5.2 The Impact of Multi-literacy of the STAR project on students' learning.

After attending the programme, there is an increase in students' **awareness** in terms of their understanding of the different concepts of literacies as reflected in their journals and learning logs. At this point, the researcher would like to infer to the metaphor of the **iceberg** where only the tip of the programme was highlighted in this study. The aim of the reading programme is to entice the students to read through using a multi-media approach. It is hoped that once these students are interested and motivated, they will be engaged readers and thus, deeper learning will take place.

As described in Chapter Four, most of participants had displayed the first or the awareness level. Others had moved up to the second level where they gained some understanding of the concepts used in the reading programme. The skills acquisition process was not developed at that time. Based on what have been discussed, the researcher noted the followings:

a. There was a slight improvement in students' perception of their EL proficiency as indicated by the post test. The core leaders of the STAR project were able to present their projects during the two-day open house — some took on the role of emcees, some presented a short skit and others shared their experiences of the programme with the visitors;
b. Students, including those that were in the academically weaker streams, indicated their ability to better handle computers, internet

and other forms of IT gadgets for the general purpose of education and recreation. For example, they have learnt video filming, editing, scanning, and other basic skills required to complete their group project works.

c. Students learnt to analyse inferential questions; evaluate information, compare and contrast, using metaphors and analogies for visualisation or mental association exercise throughout the lessons.

d. They were also exposed to a simple version of Problem Based-Learning;

e. There was an understanding among the participants of the need to have the correct mindset and attitude to survive in a highly globalised and competitive society;

f. The concept of National Education and its relation to personal values and good working ethics were better appreciated; and

g. Many students felt that they had gained better confidence in oral presentation and discussions.

It was noted that students were able to explore and transcend their own social boundaries during the STAR project. Students from different racial groups, academic streams, gender groups and levels worked together to complete their assignments.

Also, by adopting a student-centred approach where students were given ample opportunities to present their ideas and showcase their products, students managed to gain various competencies (e.g. reading, researching, writing,

organising, presenting) and were confident with their abilities to execute various tasks.

One drawback of this study is that the researcher did not really "quantify" the cognitive, social, intellectual, emotional gain that the students or she herself as a teacher had derived from this project. However l, it is suffice to say that the high level of engagement, involvement, commitment, contribution of the various participants were strongly visible and evident throughout this research project and these had been used as key performance indicators in measuring its value and impact on the students as well as the researcher.

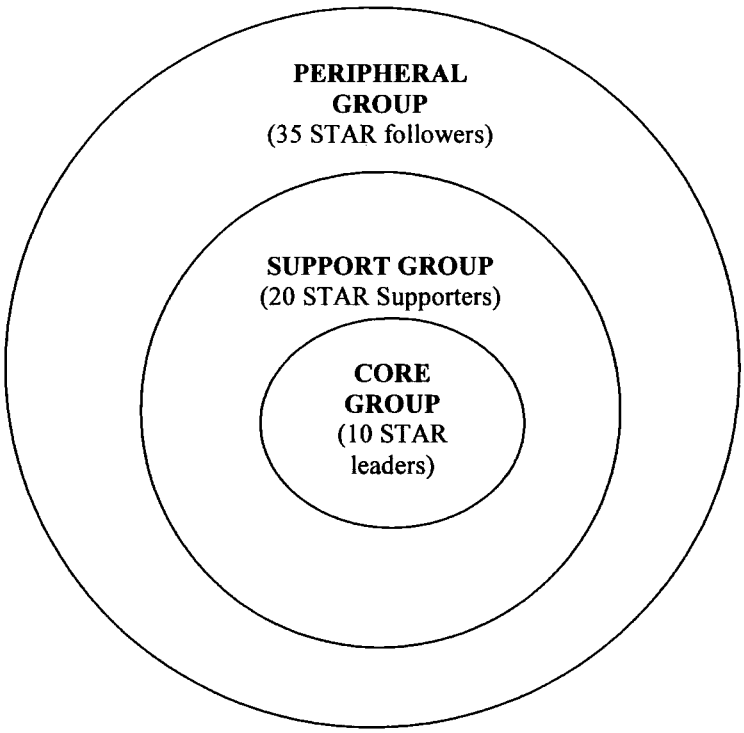
5.2.1 Emergence of Non-Conventional Student Leaders[55]

One of the unintended results of the STAR project was the emergence of student leaders among the core group. They were adept in IT and related activities. The active core members of about ten to 12 students had taken the task of gathering relevant information and led other groups in organising and collating various activities for the national iTopia event.

As explained in Chapter Four, ten Learning Circles (LCs) were formed to implement the workings of the STAR project among the students. The aim of LCs is to optimise peer and collaborative learning. The evolution of group dynamics and the level of students' commitment to the project are represented in the three concentric circles in Figure 16.

[55]The conventional student leaders in the school are the school prefects, sports leaders and Co Curricular Activities leaders in the area of uniform groups, clubs and societies.

Figure 16: Concentric Circles of Students' Dynamics



The inner circle represents the core group of active students who were vocal and showed genuine interest during the STAR camp. They were the leaders of their respective LCs who were willing to take initiative, spearhead selected tasks and complete all relevant project works which were exhibited during iTopia. They were very expressive, gave candid feedback, and were able to write contemplative journals (the highest level of reflection). The core group were able to motivate, direct and organise other students in various follow-up activities.

These students emerged as **leaders** and collaborators when given opportunities to shine beyond the conventional school platform. They became agents of change in the school context by assisting the researcher in this bottom-up initiative. The leaders contributed to the conceptual process of this reading programme and provided technical support to carry out the STAR camp. The nature of the relationship between the researcher and the core leaders is one of

co-collaboration because the latter were actively involved in peer teaching and coaching fellow participants during the STAR camp.

The second group consisted of about 20 students. These students were the **'doers'** or the supporting group. They diligently completed all tasks given to them and helped the researcher in organising the exhibitions and open house. Together with the core group, these students were the back bone of the two-day open house which featured the Star programme, the demonstration of the STAR learning portal, STAR website and the STAR exhibition. Students in these two circles had a high sense of ownership and belonging to the programme.

The outermost group of about 35 students were the **followers.** They made up the peripheral group. Students in this circle played a complementary role. They waited for direction and instruction from teachers, trainers, seniors and fellow participants. They provided necessary support and helped only when asked. They merely attempted to finish the tasks assigned to them.

With the emergence of these non-conventional student leaders during the STAR project, the school then decided to develop the student leadership programme to include them. The core group possessed skills in ICT, Entrepreneurship, and Service Learning. The researcher was subsequently given the responsibility to develop the PYSS students' leadership programme, in addition to the conventional students' leaders in the prefectorial board.

5.2.2 Operationalisation of School Motto,[56] of Vision, Mission and Values

During the programme, students learned to be disciplined in their work as they were left very much on their own to make decisions. Most participants reported that the team spirit was high and that they had gathered more ideas through brainstorming sessions. One student from the Normal Academic stream confessed that her involvement in the project had ignited her interest in her studies and that she planned to go to university.[57]

Students were very motivated to complete their assigned tasks because their project works were to be exhibited in the iTopia. They diligently completed all their work and had proudly presented their works to the local and foreign visitors during the school open house. On their own initiatives, they embarked on spin-off programmes. Thus, it could be concluded that the STAR project was able to 'operationalise' the school values, vision and mission, though in a very limited sense of the word. This is because the number of students involved was only five percent of the overall student's population in PYSS.

5.2.3 Optimising the PYSS Library's Role as a Learning Hub

The STAR programme has enhanced the functions of PYSS library whereby a teacher-librarian manages to design and implement a reading curriculum. According to the Taxonomy given in Chapter Two, this causes an 'upward push' of the function of the library from existing level 7 to levels 10 and 11. The PYSS Media Resource Library (MRL) can function in greater capacity as a hub of

[56]The school Motto is "Perseverance Yield Success."

[57]This particular student emerged as the best NA student in the 2003 G.C.E. 'N' level. She sat for the G.C.E 'O' level examinations n 2004 and is currently (2005) doing her matriculation at the University of Melbourne.

education, entertainment, information and communication, thus, enhancing students' learning and interest in reading.

The PYSS MRL has therefore played a very crucial and central role in supporting a new age of education. Foo (1999) has emphasised the important role of the HOD IT cum MRL in the new millennium as Singapore gears herself towards a truly information society. Since schools are tasked with the important role of educating and training the new generation of students to become knowledge workers of the future, and thereby realising the Singapore's government vision of a "Thinking School, Learning Nation", the MRL must be staffed with a highly qualified resource specialist. He or she must have qualifications in education and information science/ librarianship as practised in many schools in Australia, the United Kingdom and the United States of America (Foo, 1999).

Though the researcher is an untrained teacher-librarian, she was able to develop an integrated curriculum and introduce multi-literacy to her students, and of course, this was done with a lot of difficulties. The STAR project had allowed her to contribute a value-added enrichment reading programme, which not only helped to promote reading among the students, but also enhanced their awareness of the new literacies needed to function effectively in this KBE era.

5.3 Personal Reflections, Learning Points and Implications

5.3.1 Obtaining genuine support and endorsement from the School Management

To effectively implement an innovative programme like the STAR project, there is a need to obtain explicit support and endorsement from the principal and the school management committee. Too often, teachers are encouraged to bring about reforms but are not given enough space, time, support and resources to bring about the intended reforms.

This was experienced by the researcher as she had to carry the full load of her teaching duties, in addition to her involvement in conducting this action research project. As she had been teaching upper secondary and graduating classes, she had to place greater priority for her students who were doing their 'O' level examinations. Consequently, this had posed a great constraint for her to complete the task on stipulated time.

5.3.2 Whole-school Approach

Based on the researcher's experience, in order to obtain maximum results and a greater impact of the reading programme on students learning outcomes, the said programme should be implemented throughout the school and supported by all. An individual teacher and the initiation by one school department (the Library Unit) will not bring about significant results to the students' learning or improved overall school's performance and ranking.

Reforms and innovations of such nature should be aligned to the strategic thrust of the school and be made part of the school's philosophy. It should not be a stand alone 'innovation' done on an ad hoc basis and carried out by one teacher

from one department. In that sense, from the management perspective, this programme did not bring about significant impact to the school.

5.3.3 Professional Development

Over a period of six years, the researcher had attended on her own accord numerous courses related to this study because she is neither a trained teacher-librarian nor a reading specialist. She had attended various in-service professional development courses organised by the Ministry of Education, Teachers' Network, and other private educational institutions. Some of the areas of training attended were on action research, library management, reading instruction, curriculum integration, web evaluation, integrated curriculum, group guidance and other related ICT courses. This is her strategy to build her capacity on her own initiative that enabled her to carry out this STAR project and the school-based Collaborative Action research in a more effective manner.

In conclusion, while the researcher recognized the importance of attending courses and doing professional reading is beneficial; at the end of it she believes that the teacher must be able to apply meaningfully what she has learnt to improve her teaching practice. Based on her observations and experiences again as a teacher, many times, teachers routinely carry out various school activities without having the full understanding of the rationale and the group processes. Even if they do, it is the instrumental understanding which reflects a rather superficial knowledge that they have on this issues.

This whole process of conducting STAR project and the CAR at PYSS has sharpened her understanding on the importance of having both the acquisition of theoretical knowledge (*relational understanding*) as well as the practical skills (*instrumental understanding*) for a teacher-researcher like her to fully appreciate the rationale and the entire process that look at what and why things are being carried out certain ways. In other words, having a full understanding in both domains would enable teachers to synthesise, integrate and weave different bodies of knowledge.

5.3.4 Clarity of Intent: 'Put the End First'

The researcher would like to reiterate that the most critical part of this study is the need to have clear aims at the very onset of the study. A teacher must always start a programme with the end in mind (Covey, 1990). This will help in steering the direction of the programme, the issue of sustainability and resource allocation. When this study was first carried out in 1999, this did not come very clearly into the mind of the researcher. The need to have clarity of intent at the beginning of the study came as she went through the many "cycles". Finally, a strong monitoring and review system must also be put in place.

Another realisation made which is linked to the preceding paragraph is the need to hold an event where all students' works and products could be exhibited. The national event iTopia, was the ideal "end game" that motivated the students to complete their works for public display and recognition.

Thus, teachers who carry out such innovations might want to use the annual school events like the Foundation Day, Speech and Prize Giving Day, the National Day, the Youth Day or Library Week as platforms to display students' works. This would have had tremendous impact on participants' morale and the self confidence because they could attach meaning, purpose and relevance of their work to the activity carried out.

5.3.5 Establishing Project Target

Another shortcoming of the research is the initial lack of an end-point. This had caused much displacement to the project and eventually, it lacked proper framework and documentation. The research target was constantly changed due to advancement of new technology, numerous ideas from participating students, new initiatives from the ministry and changes in school policy and school principals.

While the researcher was elated to see a small idea bloomed into a full blown project, she also agonised over constant changes made to the scope and nature of the research work, partly to meet her students' and her own interests and, partly because of having to accept the recommendations from her superior.

However, at the end of the project, the researcher realised that quality and effective education requires "edupreneurs" who could adapt to changes in the environment and, provide meaning to both the teacher and learners. Thus, the researcher has to be innovative, flexible and adaptable. She has to have full understanding of and skills on teaching, curriculum instructions, project designing and management and, finally, research processes.

5.3.6. The 10Ps of CAR (Collaborative Action Research) in PYSS

Based on the experiences of the researcher in conducting this study, she had discovered painfully the "systematic process" involved in conducting school-based CAR. She has identified 10 important steps that she believes would effectively and successfully helps a teacher to conduct similar Action Research project in a school. The 10Ps are sequenced in such an order, to reflect the actual process that she had gone through.

They are: Passion, Professionalism, Proactive, Partnership, Problem, Plan, Paper, Programme, Products, and the final one, Presentation. The first four Ps could be categorised as "prerequisite qualities" that a teacher-researcher should have before embarking CAR. The remaining six Ps are the actual research procedures or action research steps that a teacher-researcher normally would go through in the process. The brief discussion of each is given below.

1. Passion - As a teacher, the researcher is of the view that passion is one of the most important and critical prerequisite qualities for a teacher to have in fulfilling her demanding daily task of teaching students. This passion serves as intrinsic motivation that becomes the driving force to enable her to follow through and sustain her interest and the interest of the students as well as completing the whole project despite having to face subtle resistance, challenges and other problems.

2. Professionalism – The researcher concludes that while being a nurturing teacher with passion is an important quality, it is not a sufficient one. For the effective functioning of a teacher to take place in this highly competitive

environment of the constant change of the education landscape, teachers must have high levels of professionalism that transcends basic ethics. For instance, as reflected in the context of the study is the researcher's valued responses given as feedback by critical friends among fellow teachers, trainers and parents and even students, her subjects of the study. This had made her to be professionally engaging, and such experiences had been very enriching. This is achieved despite the fact that she had to make some revisions on certain occasions to her initial ideas of this project. She had to exercise objectivity throughout the study because of her double roles as teacher and researcher. All these elements had made her to be more aware of the importance of teacher professionalism in conducting school-based research.

3. Proactive - literature reveals that a proactive teacher normally places a higher emphasis on students' learning as opposed to merely teaching her content subject or her area of specialization. The researcher is a proponent and practitioner of research-based teaching and learning applications and methodologies. As mentioned, she has proactively conducted four action researches including this study throughout her years of teaching. Besides, she had also galvanized the support of parents and others to develop the full potential of her students.

4. Partnership - This programme had shown the extensive collaboration work with teaching and non-teaching staff in the school, the members of the PSG the school alumni members, the parents in general, the professional trainers,

the Teachers Network, an academic from the National Institute of Education, non-government organisations, and private companies too. Though the extent and the scope of collaboration is different from each group, the whole network of working together with multiple partners have brought a "real" meaning of "working life" to many of the students. This is indeed a priceless experience for the researcher and her students when a genuine synergy through collaboration was formed with various partners throughout every stage of the study.

5. Problem – At the initial stage of this research, the issue of reading among the non-readers was not the actual research problem identified. However after casual observations made in the 'new school' that the researcher was posted to then, she began to ask around out of her own curiosity. With the changes initiated at the MOE and school level, she used this evidence-based inquiry to focus on the work that she was involved in, that was her CCA, being teacher-librarian. Being practical, she later embarked this journey.

6. Plan – Subsequently the researcher had to plan how to conduct the "innovation" without upsetting the physical and socio-psychosocial environment of the school. The other part of the planning consists of the process of getting unreserved support from the relevant authorities; the head of department, the school principal, the cluster superintendent and finally the ministry. In addition, any project development programme would require project funding, the mapping of new curriculum, drawing out schedule, and the setting of time frame.

7. Paper – At this stage the researcher had already produced a proposal or a concept paper that had to be given to her superior for approval and final endorsement. This was followed with the preliminary readings, conducting internal and external scanning, utilising the school-based data that would provide some direction of the study.

8. Programme –When an intervention programme was conceptualised as a strategy to improve the existing reading practice, the researcher had concurrently produced the new set of materials, teaching and learning resource kit, lesson plans, camp programmes and other important documents. This included the assessment rubric and format for evaluation purposes.

9. Products – In this context of the research, the products referred here includes the development of the Electronic-reading portal, the creation of the STAR website, the students' task sheets, the pre and post tests, the learning log and reflective journal and all other students Project work and documentation that were used in the iTopia's presentation and exhibition.

10. Presentation – The presentation in this study took two major forms; one was the actual presentation made during the two-day iTopia that involved all the 65 participants and the rest of the student population, which includes the school prefects, the researcher and her partners and secondly, the documentation of this thesis. The former was the researcher's contribution towards her school, her students, and her colleagues in PYSS and the latter was meant specifically for her own self fulfillment. Both have given the researcher the opportunities to learn to be more professional in her work as

she needs to present and showcase them for public consumption and both have given her that personal sense of accomplishment

5.4 Recommendations for Further Research

Based on the findings and conclusions of the study, the following areas for further research are recommended:

1. A more thorough and standardised design for data collection should be implemented. The quantitative data and survey questions could be shortened so that students will not be bored with answering them.

2. The researcher recognises the need to have a more stringent auditing system in future studies to audit every aspect of the students' literacy skills and competencies. This would have the effect of giving greater credibility to the research project.

3. The study should be replicated to include other academic levels and streams so that a cross-stream study can be conducted. A pre-study interview could be carried out where the researcher could group students of the same age, level and interests. This will facilitate group discussions where all members of the group contribute actively and equally rather than just depending on the 'core' group of students.

4. The study could be repeated at a later stage with the same group of students to ascertain the effectiveness of the STAR project, especially in the areas of reading and technological literacy. For example, if a group

of 20 Secondary Two NA students were involved in January 2005, a similar study could be replicated as a follow-up in January 2006 so that the researcher could see if there are any lasting and long term changes in their attitudes on reading.

5. With the data collected, the researcher could have done an analysis to determine if there are any causal relationships between the family background and students' skills and understanding of the different types of literacies. The researcher acknowledges this as one of the weakness of her data analyses. Nonetheless, it is not the main focus of the study since the researcher is more interested in implementing a reading programme that would motivate her students to read.

6. It would be interesting to have a formal assessment of the efficacy of the STAR programme. Rather than depending on participants' feedbacks, students' academic performances could be tracked to see if there are changes after the modules have been implemented. Teachers of other subjects could give feedback on the effects of the STAR programme on participants' performance in other subjects taught in the school, particularly for subjects like the English language, Literature and other Humanities subjects that require reading competency and language proficiency

7. Trained in counselling, the researcher has the advantage of being exposed to the systemic approach or the eco-map concept to address students' concern. Based on her experiences in initiating, conducting and

managing this school-based collaborative action research with many stakeholders, she would like to recommend that future researchers involved in collaborative action research to establish genuine collaboration with students and all stake holders for effective research, teaching and learning to take place. When this project was initiated at the initial stage, there was no formal plan of having 'collaborations' and partnership that allows the researcher to use the 'systemic' approach' in conducting this study, looking at the holistic needs of the students.

This journey has not reached its destination yet as the whole process of learning still continues……

BIBLIOGRAPHY

Abdullah, K. (1998) *Critical Reading Skills: Some notes for teacher,* National Institute of Education Publication, Singapore.

Adler, M. & Flihan, S. (1997*) The Interdisciplinary Continuum: Reconciling Theory, Research and Practice*, [Online] viewed on 30th September 2004, http//:www.cela.albany.edu/sponsor/index.html

Ambigapathy, P. (2002) English Language Teaching in Malaysia Today. *Asia Pacific: Journal of Education*, (22), pp 35-53.

Anderson, RF, & Wilson, P. (1998) Growth in Reading and How Children Spend Their Time Outside of School. *Reading Research Quarterly*, (23), 285-303.

Asher, J. J. (1996) *The Super School of the 21st century*. 3rd edition, U.S.A: Sky Oaks Productions Inc.

Baker, J. (2000) *Evaluating the Impact of Development Projects on Poverty: A Handbook for Practitioners.* Washington D.C.: World Bank.

Beane, J. A. (1997) *Curriculum integration: Designing the core of democratic education.* New York: Teachers College Press.

Beck, I.L. & McKeown, M.G. (1989) Expository text for young readers: The issue of coherence. In L.B. Resnick (Ed.) *Learning to read in American schools.* Hillsdale, NJ: Erlbaum.

Benson, P. L., Galbaraith, J. & Espeland, P. (1998) *What teens need to succeed.* U.S.A: Free Spirit Publishing Inc.

Bertram C. Bruce (1997) Literacy Technologies: What Stance Should We Take? *Journal of Literacy Research,* 29 (2), 289-309.

Biondo, S.M., Raphael, T.E.,& Gavelek, J.R. (2000*) Mapping the Possibilities of Integrated Literacy Instruction.*[Online] Viewed on 25th October 2002, http://www.readingonline.org/past/past_index.asp?HREF=/research/biondo/biondo.html

Bonds, C., Cox, C. III. & Gantt-Bonds, L. (1993) Curriculum Wholeness through Synergistic Teaching. *The Clearing House,* 66 (4) 252-254.

Booth, D. (2001) *Reading and Writing in the Middle Years.* Ontario: Pembroke Publishers.

Borg, W.R. (1987) *Applying Educational Research: A Practical Guide for Teachers.* New York: Longman.

Bransford, J.D., A.L. Brown, & R. Cocking (eds.) (2000) *How People Learn: Brain, Mind, Experience, and School.* Washington, DC, National Academy Press.

Brooks, J.G. & Brooks, M.G. (1993) *In search of understanding: The case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Brooks, G. W. (1999) *Exploring the relationship between teachers' reading and writing and their teaching of reading and writing.* UMI Dissertation Services.

Bruce C. (1997) *Seven Faces of Information Literacy in Higher Education.* [Online] viewed on 11th April 2003 http://sky.fit.qut.edu.au/~bruce/inflit/faces/faces1.php

Bruce, C. (1997) *The Seven Faces of Information Literacy.* Adelaide: AUSLIB Press.

Bruce, C. (2000) Information Literacy Research: Dimensions of the Emerging Collective Consciousness. *Australian Academic & Research Libraries,* 31(2), 91-109.

Bruner, J. (1990) *Acts of meaning.* Cambridge, MA: Harvard University Press.

Bryan, J.K., Merchant, C. & Cramer, K. (1999) America Calls: Technology-Based Interdisciplinary Planning and Instruction. *Classroom Leadership: Integrating Technology into the Classroom*, 2 (5). [Online] viewed on 15th January 2003. http://www.ascd.org/ed_topics/cl199902_bryan.html [15 January 2003].

Burbules, N. C. & Callister, T. A. Jr. (2000) Universities in transition: The promise and the challenge of new technologies. *Teachers College Record,* (102), 271-293.

Burke, K. (1997) *Designing Professional Portfolios for Change.* Illinois: Skylight.

Butterworth, M. (2000) Information literacy as a national agenda. In E. Howe (Ed.) *Information Literacy: Key to the future.* Papers presented at the 29th Annual Conference of the International Association of School Librarianship. Seattle, WA, IASL. [Online] viewed on 14th November 2002 http://members.iinet.net.au/~margaret/Malmopaper.htm

Calhoun, E. F. (1994) *How to use Action Research in the Self-Renewing School.* Alexandria: ASCD.

Calhoun, E. F. (1993) Action-Research: Three Approaches. *Educational Leadership. 51* (2), 62-66.

California School Library Association (1997) *From Library Skills to Information Literacy.* California: Hi Willow Research and Publishing

Callison, D. (1986) School Library, Media Programmes and Free Inquiry Learning. *School Library Journal*, 32 (6), 20-24.
Chapman, G, (2000) *Innovative Student Use of Computers: laptops versus Textbooks in Texas*.[Online] viewed on 24th July 2001 http://www.moe.gov.sg/edumall/mpite/edtech/papers/d3.pdf

Cheah, Y.M., & Lim, S.E. (1996). Literacy and biliteracy issues in Singapore. In E.F. Lai (Ed.), *Asian perspectives on biliteracy research: Facts, issues, and actions.* Proceedings of the International Development in Asia Committee Reading Research Symposium 1996, (pp. 23-40). Hong Kong: Hong Kong Reading Association

Chia, C. (1999) *Plugged into the new dimension.* Paper presented at the Library@School Conference., Singapore

Chin, W.L. Jason (2001) *Not just WITS.* Paper Presented at the Teachers' Conference, Conference Proceeding, 2, pp. 269-277.

Choo, N. L. (1999) *Prototyping new library services: The NLB'S experience. Information services and management for the new millennium.* Paper presented at the Library@School Conference, Singapore.

Cole, K., Goldman, S. & Syer, C. (1999).*The technology/content dilemma.* Paper presented at The Secretary's Conference on Educational Technology 1999. [Online] viewed on 27th April 2001 http://www.ed.gov/technolology/techConf/1999/whitepapers/paper4.html

Coleman, J., Coser, L.A. & Powell, W.W. (1966) *Equality of Educational Opportunity.* Washington D.C.: US Office of Education.

Comber, B., Cormack, P. & O'Brien, J. (2001) Schooling disruptions: The case of critical literacy in Dudley-Marling, C. & Edelsky, C. (Eds.) *Where did all the promise go? Case histories of progressive language policies and practices.* Urbana, IL: National Council of Teachers of English.

Cope, B. & M. Kalantzis. (Eds.) (2000) *Multiliteracies: Literacy Learning and the Design of Social Futures.* London: Routledge.

Corey, S. (1953) *Action research to improve school practice.* New York: Teachers College, Columbia University.

Costa, A and Liebmann, R. (1997) Towards Renaissance Curriculum: An Idea Whose Time Has Come. In Costa, A and Liebmann, R. (Eds.) *Envisioning Process as Content: Towards Renaissance Curriculum.* California: Corwin Press.

Covey S. R. (1990) *The seven habits of highly effective people.* USA: Simon and Schuster.

Crant, J. M. (2000) Proactive behaviour in organisations. *Journal of Management,* 26 (3), 435-462.

Credaro, A. (1998) *The role of the teacher librarian: A discussion paper.* [Online] viewed on 4th December 2001. http://www.geocities.com/Athens/Styx/7534/UNIVERSITY/TLship/TL_discuss.html

Cutlip, G. W. (1988) *Learning and Information: Skills for the Secondary Classroom and Library Media Program.* Colorado: Libraries Unlimited.

Dalin, P. & Rust, V. (1996) *Schooling for the 21st century.* London: Cassell.

Davis, C. (1995) Extensive Reading: an expensive extravagance? *ELT Journal* 49 (4) Oxford: Oxford University Press.

Dean S., & Houldey V (1997) Reading for Learning-Information retrieval skills in English. *Reading*, 31 (3), 9-15.

Deng, Z. & Gopinathan, S (1999) The IT-Masterplan and Thinking Schools Initiatives: The Complexity and Challenges of Curriculum Implementation. In Margit Wass (Ed.) Enhancing *Learning - Challenge of Integrating Thinking and Information Technology into the Curriculum.* Educational Research Association, Singapore

Dennise, S. (1997) Assessing Thinking Skills and Processes. In C.L. Keat and T.K. Aun (eds.) *Proceedings Research Across the Disciplines.* Educational Research Association, Singapore

Dewey, J. (1933) *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process.* Boston: D.C. Heath.

Dietz, M. E. (1998) *Journals as Frameworks for Change.* Illinois: Skylight.

Doiron, R. (2002) An administrator's guide to collection development. *School Libraries in Canada*, 21 (4), 18-21.

Drake, S. M. (1993) *Planning Integrated Curriculum - The Call to Adventure.* Alexandria, VA: ASCD.

Driscoll, M. P. (2000) *Psychology of Learning for Instruction* (2nd edition) Boston: Allyn & Bacon.

Driscoll, M. P. (2001) Computers for what? Examining the Roles of Technology in Teaching and Learning. *Educational Research and Evaluation*, 7 (2-3), 335-349.

Dupuy, B., Tse, L., & Cook, T. (1996) Bringing books into the classroom: First steps in turning college-level ESL students into readers. *TESOL Journal, 5* (4), 10-15.

Eisenberg, M. B., & Johnson, D. (1996) *Computer skills for information problem-solving: Learning and teaching technology in context.* Syracuse, NY: ERIC Clearinghouse on Information and Technology. (EDO-IR-96-04).

Farell, T. (1998) Putting READ back into the Reading Class. *SRL News Magazine*, 10 (1), 14-15.

Fields, M., Mann, A. & Waryanka, D. (2000) *A Proven Method of Assessing Technology Integration For Teachers and Students.* USA: Futurekids INC.

Fogarty, R. & Stoehr, J. (1991) *Integrating Curricular with Multiple Intelligences: Teams, Themes and Threads.* Palatine, Illinois: Skylight Publishing.

Foo, S. (1999) *Media resource libraries: challenge and opportunities.* Information services and management for the new millennium. [Online] viewed on 20th September 2001 http://www.ntu.edu.sg/home/assfoo/publications/1999/99moe_fmt.pdf

Fox, E. & Alexander, P. A. (2004) *Reading, interest, and the Model of Domain Learning: A developmental model of interest, knowledge, and strategy use in text comprehension* [Online] viewed on 25th August 2005 http://www.education.umd.edu/EDHD/faculty2/Alexander/ARL/Fox_Alexander AERA_2004.pdf

Freebody, P. & Luke, A. (1990) Literacies programs: Debates and demands in cultural context. *Prospect: Australian Journal of TESOL*, 5(7), 7-16.

Fryer, M. (1996) *Creative Teaching and Learning.* London: Paul Chapman Publishing Ltd.

Fullan, M. G. (1993) *Change Forces: Probing the Depths of Educational Reform.* London: The Falmer Press.

Fullan, M. G. (1991) *The new meaning of educational change.* London: Cassell Education Limited.

Gibson, E. J. & Harry L. (1975) *The psychology of reading.* Cambridge, MA: MIT Press.

Giordano, G. (2000) *Twentieth-Century Reading Education: Understanding Practices of Today in Terms of Patterns of the Past.* New York: JAI Press Inc.

Glover, J. A., Ronning, R. R., & Reynolds, C. R. (Eds) (1989) *Handbook of Creativity.* New York: Plenum Press.

Good, C. V. (1973) (Ed.) *Dictionary of Education, 3rd Edition.* New York, NY: McGraw-Hill.

Goodlad, J.I., & Su, Z. (1992) The organization of the curriculum. In P.W. Jackson (Ed.) *Handbook of research on curriculum.* New York: Macmillan.

Gopinathan, S. (1996) Educational Development in Singapore: Connecting the National, Regional and the Global. In J Blackmore and T.K. Aun (Eds.) *Educational Research: Building New Partnerships – A Collection of Selected*

Papers from the ERA-AARE Joint Conference. Singapore: Educational Research Association.

Gopinathan, S. (1996) Globalisation, the state and education policy in Singapore. *Asia Pacific Journal of Education.* 16 (1), 74-87.

Grady, M. P. (1998) *Qualitative and Action Research: A Practitioner Handbook.* Bloomington: Phi Delta Kappa.

Greenwood D. J. & Levin, M. (1998) *Introduction to Action Research, Social Research for Social Change.* London: SAGE.

Grundy, S. (1982) Three Modes of Action Research. In Kemmis,S. and McTaggert,R. (eds) (1988). *The Action Research Reader (3ed).* Geelong: Deakin University Press.

Grundy, S. (1987) *Curriculum: Product or Praxis.* London: The Falmer Press.

Grundy, S. & Kemmis, S. (1981). *Educational Action Research in Australia: The state of the Art.* Paper presented at the Annual Meeting of the Australian Association for Research in Education, Adelaide as cited in Grundy,S. (1988) Three Modes Of Action Research in Kemmis,S. and McTaggert,R. (Ed). (1988).The Action Research Reader (3 ed) Geelong: Deakin University Press.

Guthrie, J.T. & Cox, K. (1998) Portrait of an engaging classroom: Principles of concept-oriented reading instruction for diverse students. In K. Harris (Ed.), *Teaching every child every day: Learning in diverse schools and classrooms* .Cambridge, MA: Brookline.

Guthrie, J. T. (2000) Contexts for engagement and Motivation in Reading, The Importance of Engagement, in the *Handbook of Reading Research: Volume III* (Kamil, Mosenthal, Pearson & Barr, 2000) [Online] viewed on 4th December 2001
http://www.readingonline.org/articles/handbook/guthrie/index.html

Hall, G. E. & Hord, S. M. (2001) *Implementing change: Patterns, Principles and Potholes.* Boston: Alyyn and Bacon.

Hasan, R. & Williams, G. (eds.) (1997) *Literacy in society.* London: Longman.

Hauben, M. (1995b) The Net and the Future of politics: The ascendancy of the commons.[Online] viewed on 12th January 2001
http://www.columbia.edu/~rh120/ch106.14 .

Healy, J. M. (1998) *Failure to Connect.* New York: Simon and Schuster.

Hess, N. & Susan P. (1995) A Blending of Media for Extensive Reading. *TESOL Journal*, Summer, 7-11.

Hidi, S. (2001) Interest and reading: Theoretical and practical considerations. *Educational Psychology Review*, 13 (3), 191-208.

Hidi, S. & Baird, W. (1986) Interestingness - A neglected variable in discourse processing. *Cognitive Science*. 10, 179-194.

Hidi, S. & Berndorff, D. (1988) Situational interest and learning. In L. Hoffman, A.Krapp & K.A. Renniger (eds), *Interest and learning: Proceedings of the Second Conference on Interest and Gender* .Kiel, Germany: IPN.

Ho, C. (1997) Towards developing accuracy through online teaching promises and pitfall. In C.L. Keat and T.K. Aun (Eds.) *Proceedings Research Across the Discipline,*.Singapore: Educational Research Association.

Ho, K. C. & Jeffery, Y. (2003) *YOUTH.sg: The State of Youth in Singapore.* Singapore: National Youth Council.

Holter, I. M. & Schwartz – Barcott, D. (1993) Action Research: What is it? How has it been used and how can it be used in nursing? *Journal of Advanced Nursing,* 128, (298-304).

Holum, A. & Gahala, J. (2001) Using technology to enhance literacy instruction. *Pathways to School Improvement* [Online]. Viewed on 23rd February 2003 http://www.ncrel.org/sdrs/areas/issues/content/cntareas/reading/li300.htm .

Honey, M., McMilan, K. & Carigg, F. (1999) *The Secretary's Conference on Educational Technology-1999 Perspectives on Technology and Education Research: Lessons from the Past and Present.* [Online]. Viewed on 27th April 2002
http://www.ed.gov/rschstat/eval/tech/techconf99/whitepapers/paper1.html

Hoong, A. W. & Chang, A. (1997) What motivates pupils to learn in Singapore. In C.L. Keat and T.K. Aun (Eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Huang, Y. (1995) *Teachers experience and reflecting on curriculum integration as an approach to teacher change.*UMI Bell and Howell Company.

Hubbard, S. (1987) Information Skills for an Information Society: A Review of Research. ERIC Digest.[Online] viewed on 16th July 2001].
http://www.ed.gov/databases ERIC_Digests/ed327216.html.

Hult, C. A. (1996) *Researching and Writing in the social Sciences.* Boston: Allyn and Bacon.

InfoComm Development Authority of Singapore (2000a, March 1). *Helping Singaporeans go online* [On-line press release] viewed on 15 September 2002. http://www.ida.gov.sg

Infocomm Development Authority of Singapore (2000b, March 4) IT *Broad based approach to make Singapore the location for Infocomm manpower and savvy workforce* [On-line press release] viewed on 15 September 2002. http://www.ida.gov.sg/website/ida.3fdlc825689800850dc.9?Open Document

Information Literacy Guidelines. (1997) Languages & Library Branch, Curriculum Planning & Development Division, Ministry of Education, Singapore

Information Literacy Supplementary Materials (1997) Languages & Library Branch. Curriculum Planning & Development Division, Ministry of Education, Singapore

.

International Technology Education Association (2001) Standards for Technological Literacy, Content for the Study of Technology. Viewed on 23rd September 2003
http:// www.iteawww.org

Ivers. K. S. & Barron, A. E. (1997) *Multimedia projects in education: designing, producing and assessing.* Conn: Libraries Unlimited.

Jacobs, H. H. (1989) *Interdisciplinary Curriculum - Design and Implementation* Alexandria: ASCD.

Jackson, T. (1999) Thinking about thinking and assessment: Isn't it time for the tail to stop wagging the dog? In M. Waas (ed.) *Challenge of the integrating thinking and information technology into the curriculum.* Singapore: Educational Research Association

James, B. & Fogarty, R. (1999). *Blueprints for thinking in the cooperative classroom.* Illinois: Skylight Publishing.

Jonassen, D. H. (1999) *Constructivist Learning Environments on the Web: Engaging Students in meaningful Learning.* Paper presented at EdTech Conference, Singapore.[Online] Viewed on 5th August 2002
www.moe.gov.sg/edumall/mpite/edtech/papers/d1pdf

Joyce, B. R. (1991) Doors to School Improvement. *Educational Leadership* 48 (8), 59-62.

Kam, H. W. (1997) Language policies and language education in East Asia: an Overview. In C.L. Keat and T.K. Aun (eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Kannan, J. & Macknish, C. (2000) Issues affecting On-line ESL Learning: A Singapore Case Study. *The Internet TESL Journal, 6(1).*

Kanter, R. M. (1988) When a thousand flowers bloom: Structural, collective and social conditions for innovation in organizations. *Research in organisational Behaviour.* 10, 169-211.

Kanter, R. M. (2001*) Evolve! Succeeding in the digital culture of tomorrow.* Boston: Harvard Business School Press.

Kings, C. B. & Mau, R. Y. (1997) *Evaluating the impact of information technology on student learning: prospects and strategies.* In C.L. Keat and T.K.

Aun (eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Kintsch, W. (1980) Learning from text, levels of comprehension or: Why anyone would read a story anyway. *Poetics, 9,* 87-89.

Knudsen (1937) What do educators mean by integration? *Harvard Educational Review*, 7, 15-26.

Knutson, E. K. (1998) Reading with a Purpose: Communicative Reading Tasks for the Foreign Language Classroom [Online] Viewed on 27th July 2000 http://www.ericdigests.org/1999-3/reading.htm

Knuth R. A. & Jones, B.F. (1991) What does research say about reading?: [Online] Viewed on13th June 1999) http://www.ncrel.org/sdrs/areas/stw_esy/str-read.htm

Koh, A. (2000) *Critical Cyber Pedagogy.* Paper presented at the Educational Research Association Conference, Singapore.

Krashen, S. (1993) *The Power of Reading Insight from the Research.* Englewood,CO: Libraries Unlimited Inc.

Lake. K, (1997) Integrated Curriculum School Improvement Research Series, Close up#16. [Online] viewed on 17th June 2000 http://www.nwrel.org/scpd/sirs/8/c016.htm

Lance, K. C. (2001) *Proof of the Power: Quality Library Media Programmes Affect Academic Achievement. Multimedia Schools.* [Online] Viewed on 23rd July 2003. http:// www.infotoday.com/MMSchools/sep01/lance.htm

Lance, K. C. (2001) *Proof of the Power: Recent research on the impact of school library media programmes on the academic achievement of U.S. public school students* (ERIC Digest). [Online] Viewed on 9th December 2002 http://www.ericfacility.net/databases/ERIC_Digests/ed456861.html

Lankshear, C. & Knobel, M. (2003) *New literacies: Changing knowledge and classroom learning.* Buckingham, UK: Open University Press.

Lankshear, C., & Snyder, I., with Green, B. (2000) *Teachers and technoliteracy. Managing literacy, technology and learning in schools.* Sydney: Allen & Unwin.

Lankshear, C., Gee, J.P., Knobel, M., & Searle, C. (1997) *Changing literacies.* Buckingham, UK: Open University Press.

Leu, D. J., Kinzer, J., Coiro, C. K., & Cammack, D. (2004) Toward a theory of new literacies emerging from the Internet and other information and communication tecnologies. In R. B. Ruddell & N. Unrau (Eds.) *Theoretical models and processes of reading, 5th edition.* Newark, DE: International Reading Association.

Lemke, J.L. (1993) Education, cyberspace and change. Electronic Journal on Virtual Culture,1 (1)[Online] Viewed on 10th October 2001 http://webpages.marshall.edu/stepp/vri/ejvc/EJVCVN.html.

Lee, L.C. & Ng A. (2001) *Action Research and work improvement teams (WITS) – Engendering peer review and task management responsibilities*, paper presented at the ERA Conference, Singapore.

Lee LC (2001) *How action research can be integrated in the Singapore School System,* paper presented at the ERA Conference, Singapore.

Leong, C. (1999) *Library school conference-Information Services and management for the new millennium.* Paper presented at the Library@School Conference, Singapore.

Lim, L. & Mau, R. (1997) Enhancing professional development through constructive and collaborative alignment. In C.L. Keat and T.K. Aun (Eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Lui, E. (1997) Careers grow and glow- The Singapore Way. In C.L. Keat and T.K. Aun (Eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Lonsdale, R. E. (1994) *Technology and Reading: Friends or Foes?* Paper presented at the National Reading Seminar (139-144).

Luke, A. (1997) Genres of power: Literacy education and the production of capital. In R. Hasan & G. Williams (eds.) *Literacy in society.* London: Longman.

Luke, C. (2000) Cyber-schooling and technological change: Multiliteracies for new times. In B. Cope & M.Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures.* London: Routledge.

MacGilChrist, B. (1996) Reading and achievement: some lessons for the future. *Research Papers in Education,* 12(2), 157-176.

Macintyre, C. (2000) *The Art of Action Research in the Classroom.* London: David Fulton Pub.

Marzano. R. J. (1991) Fostering Thinking across the Curriculum through Knowledge Restructuring. *Journal of Reading,* 34(7), 518-525.

Mathison, S. & Freeman, M, (1997) *The Logic of Interdisciplinary Studies.* Paper presented at the Annual meeting of the American Educational Research Association, Chicago.

May, F. B. & Rizaddi, L. (2002) Reading as Communication : 6th Edition. Merrill Prentice Hall.

McBrien, J. L., Brandt, R. S., & Cole, R. W. (1997) *The language of learning: a guide to education terms*. Alexandria, Va.: Association for Supervision and Curriculum Development.

McCutcheon, G. (1995) *Developing Curriculum: Solo and Group deliberation.* New York: Longman.

McKernan, J. (1991) *Curriculum Action Research. A Handbook of Methods and Resources for the Reflective Practitioner* London: Kogan Page.

McMillan James H., Schumacher Sally (2006) *Research in Education: Evidence-based inquiry.* Pearson Education Inc.

McNiff, J., Lomax, P. & Whitehead, J. (2003) *You and Your Action Research Project* London : Routledge Falmer.

McTaggart, R. (1992) *Action research: Issues in theory and practice*, paper presented to Methodological Issues in Qualitative Health Research Conference, Deakin University.

Medwell, J. (1998) The talking books project: Some Further Insights into the Use of Talking Books to Develop Reading. *Literacy*, 32 (1), 3–8.

Ministry of Education (1984) *Guidelines for Implementation an Extensive Reading Progamme Secondary Level.* Singapore: Ministry of Education,

Ministry of Education (2002) Ability-Driven Education: Making it Happen, Ministry of Education Planning Document: Work Plans for 2001-2002.

Mok, R. (1994) *Read and learn: The case for promoting reading in* Singapore school. Paper presented at the National Reading Seminar.

Moon, J. A. (2003) *Reflection in Learning and Professional Development, Theory and Practice.* Great Britain: Kogan Page Ltd.

Moursund, D. (1999) Ten powerful ideas shaping the present and future of IT in education. *Learning and Leading with Technology,* 27(1), 4.

Moursand, D. & Bielefeldt, T. (1999) *Will new teachers be prepared to teach in the digital age?* [Online] Viewed on 15th September 2001 http://www.mff.org/pubs/ME154.pdf.

Muspratt, A., Freebody, P. & Luke, A. (Eds.) (1996) *Constructing critical literacies: Teaching and learning textual practice.* Cresskill, NJ: Hampton Press.

Muspratt, S., Luke, A. & Freebody, P. (1997) *Constructing critical literacies.* Sydney: Allen & Unwin.

Nathan, J.M. (2001) Making "thinking schools" meaningful: Creating thinking cultures.In J. Tan, S. Gopinathan, & W.K. Ho (Eds.) *Challenges facing the Singapore Education system today.* Singapore: Prentice Hall.

National Center for Education Statistics (NCES). (2000) *Internet access in public schools and classrooms:1994–98.* [Online] Viewed on 1st March 1999 http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001071

National Council for Accreditation of Teacher Education (NCATE). (1997). *Technology and the new professional teacher: Preparing for the 21st century classroom.* [Online] Viewed on 1st March 1999. http://www.ncate.org/accred/projects/tech/tech-21.htm

National Education Technology Standards, (2000) *International Society for Technology in Education.*[Online] Viewed on 4thJune 2002. http://www.cnets.iste.org

NCTE Commission (2004) *A Call to Action: What We Know About Adolescent Literacy and Ways to Support Teachers in Meeting Students' Needs, A Position/Action Statement from NCTE's Commission on Reading.* [Online] Viewed on 25th October 2005. http://www.ncte.org/about/over/positions/category/read/118622.htm.

Ng, S.H. (2000). *Stirring the media scene.*[Onine] Viewed on 6 September 2001. http://www.gov.sg/mita/MMJun00/p01_01.htm .

Ngoh, M. S. (1997) Normal Academic students perceptions of teachers' teaching and classroom management. In C.L. Keat and T.K. Aun (eds.) *Proceedings Research Across the Disciplines.* Singapore: ERA.

Norris, C., Smolka, J., & Soloway, E. (1999) *Convergent analysis: A method for extracting the value from research studies on technology in education.* Washington, D.C.: U.S. Department of Education.

Pachler, N. (1999) Theories of learning and ICT. In Leask, M. and Pachler, N.(ed.) *Learning to teach using ICT in the secondary school.* London: Routledge.

Padak, N. D. & Bardine, B. A. (2004) Engaging readers and writers in adult education contexts. *Journal of Adolescent & Adult Literacy*, 48(2), 126-137.

Palloff, R. M. & Pratt, K. (2001) *Lessons from the Cyberspace Classroom. The Realities of Online Teaching.* U.S: Josey-Bass.

Papert, S. (1997) Educational Computing: How Are We Doing? *Technological Horizon in Education, 24(11)*, 78-80.

Pavri, F. (1998) Plugged In, Spaced Out: What's the Relevance of Computers in Education? In J.M. Nathan (ed.) *Educating For the Good Society.* Singapore: The National University of Singapore Press.

Penuel, W. & Means, B. (1999) *Observing Classroom Processes in Project-Based Learning Using Multimedia: A Tool for Evaluators.* The Secretary's Conference on Educational Technology 1999 – Evaluating the Effectiveness of Technology. Washington DC: US Government Printing Office.

Perrin, K. (1991) A Reading Programme: From the Personal and Pleasurable to the focused and extended. *TELL Magazine, 15.*

Ramanathan, S. & Becker, J. (2001) *Internet in Asia.* Singapore:Asian Media Information and Communication Centre.

Reeves, A. R. (2004) *Adolescents Talk about Reading: exploring resistance to and engagement with text.* Newark,DE: International Reading Association.

Rein, D. (2000) *What is Effective Integration of Technology and does it make a difference?* Paper presented by Apple Computer, Inc Cupertino, CA USA.

Renninger, K. A. & Wade, S. E. (2001) Engaging students in reading: Implications for Research and Practice. *Educational Psychology Review,* 13(3).187-190.

Roberts, B. (2000) Innovation Quotient. *Electronic Business,* 26(13),96-104.

Robertson, J. (2000) The three R's of action research methodology: Reciprocity, Reflexivity and Reflection-on-realty. *Educational Action Research,* 8(2), 307-318.

Roblyer, M.D., Edwards, J. & Havriluk, M. A. (1997) *Integrating educational technology into teaching.* NJ: Prentice Hall.

Rodney Gerber (1999) Developing *a culture that uses information technology to promote learning.* In M. Waas (Ed.) *Challenge of the integrating thinking and information technology into the curriculum.* Singapore: ERA

Ross C.S, McKechnie Lynne (E.F.), Rothbauer P. M. (2006) *Reading Matters: What the Research Reveals about Reading, Libraries and Community* Libraries Unlimited, Westport,Connecticut

Routman, Regie (2003) *Reading Essentials – The Specific you need to teach Reading Well.* Heinemann, Portsmouth N.H.

Sagor, R, (1993) *How to Conduct Collaborative Action Research.* Alexandria: ASCD

Sangkaeo, S. (1999) Reading habit promotion in Asean libraries. *65th IFLA Council and General Conference,* Bangkok, Thailand, August 20-August 28, 1999.[Online]Viewed on 3rd October 2001 http://www.ifla.org/IV/ifla65/papers/091-114e.htm

SCANS (2000) *What Work Requires of Schools, The Secretary's Commission on* Achieving *Necessary Skills.* U.S. Department of Labor, June 1991, revised May 1, 2000. [Online] Viewed on 16 July 2002. http://wdr.doleta.gov/SCANS.whatwork/

Schank, R. C. (1979) Interestingness: Controlling Inferences. *Artificial Intelligence* 12 (3), 273-297.

Schiefele, U., & Krapp, A. (1996) Topic interest and free recall of expository text. *Learning and Individual Differences, 8,* 141–160.

Schaefer, R. J. (1967) *The School as a Centre of Inquiry.* New York: Harper and Row.

Schwarz, G. (2003) Renewing the Humanities through Media literacy. *Journal of Curriculum and Supervision, 19, 44-45.*

Seels, B. B. & Richey, R.C. (1994) *Instructional Technology: The Definition and Domains of the Field.* Washington, DC: Association for Educational Communications and Technology.

Selener, J. D. (1992) *Participatory action research and social change: approaches and critique.* University of Cornell: UMI.

Senge, P. (1999) *The Dance of Change.* New York: Doubleday.

Senge, P., McCabe, N. H. C., Lucas, T., Kleiner, A., Dutton, J. & Smith, B (2000) *Schools that learn: A fifth Discipline Fieldbook for Educators, Parents and Everyone who cares about education.* London: Nicholas Brealey Publishing.

Senge, P. (1990) *The Fifth Discipline: The Art and Practice of Learning Organisation.* New York: Doubleday.

Shoemaker, B. J. (1989) Integrated Education: A curriculum for the 21st century. *Oregon School Council Bulletin,* 33(2), I 46 ERIC Document No ED 3116-02.

Singapore Press Holdings (1999) *Singapore Press Holdings Annual Report.* Singapore: Singapore Press Holdings.

Sirotnik, K. A. (1987) Evaluation in the Ecology of Schooling. In J. I. Goodlad (Ed.) *The ecology of school renewal: Eighty-sixth yearbook of the National Society of Education.*

Sirotnik, K. A. (1987) The Information Side of Evaluation for Local School Improvement. *International Journal of Educational Research,* 11(1), 77-90.

Snyder, J., Bolin, F., & Zumwalt, K. (1992) Curriculum implementation. In P. W. Jackson (Ed.), *Handbook of research on curriculum.* New York, NY: MacMillan Publishing.

Soek, L. Y. (2002) *Library Utilization and Reading Pattern.* Singapore: Department of Statistics, Social Statistic Section.

Somekh, B. (1999) *Designing learning tasks with IT.* In M. Waas (Ed.) *Challenge of the integrating thinking and information technology into the curriculum.* Singapore: ERA

Starker, R. (2003) *The Media Resource Library, A Short Course for Teacher Librarians & Library Officers.* Singapore: NLB Institute.

Surbeck, E., Han, E.P., & Meyer, J.E. (1991) Assessing reflective responses in journals. *Educational Leadership*, 48(6), 25-27.

Swartz, R.J., Fisher, S.D. and Parks, S. (1998) *Infusing the teaching of critical and creative thinking into secondary science.* California: Critical Thinking Press and software.

Tan, E. (1997) Discipline school problems in schools-Teachers perception. In C.L. Keat and T.K. Aun (Eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Tan, G, & Kwen, B. H. (1997) Using project work to enhance science learning at Secondary One Level: An exploratory study. In C.L. Keat and T.K. Aun (Eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Tan, J., Gopinathan, S. & Ho, W. H. (Eds) (2001) *Challenges Facing the Singaporean Education System Today.* Singapore: Prentice Hall

Tan, T. K. Y. (2000). E-*Government-Outlining the strategic thrusts.* (A speech delivered at the opening of the Communication Asia, June 6, 2000).[Online] Viewed on 4 April 2001
http://ida.gov.sg/website/ida...7a81c82568f6001609ac?OpenDocument

Tanis, R. S. (2003) *What are the factors in a high school summer reading program thatcontribute to students' reading motivation?* Project for completion of the Educational Specialist Degree, University of Georgia. [Online] viewed on 25th August 2004
http//www.arches.uga.edu/~rtanis/Rtanis_Applied_Project.doc

Tapscott, D. (1998) *Growing up digital: The Rise of the Net Generation.* New York: McGraw-Hill .

Tapscott, D. (1999) Educating the Net Generation. *Educational Leadership,* 56(5), 6-11.

Topping, K.J., M.C. Shaw & A.M. Bircham (1997) Family Electronic Literacy: Part 1 Home-School Links Through Audiotaped Book*s. Reading,* 31(2), 7-12.

Towndrow, P. (2001) *The Role of Technology and Technology Training in Shaping Educational Policy: The Singaporean Experience.* In J. Tan, S. Gopinathan & H.W. Kam (eds.) Challenges Facing the Singapore Education System Today. Singapore: Prentice Hall.

Underwood, J. D. M. & Underwood, G. (1990) *Computers and Learning: Helping Children Acquire Thinking Skills.* Cambridge, Massachusetts: Basil Blackwell Inc.

U.S. Department of Education (1999) *Getting America's students ready for the 21st century: Meeting the technology literacy challenge.*[Online] Viewed on [30 January 1999]
http://www.ed.gov/Technology/Plan/NatTechPlan/

Vanithamani, S. (1997) *A study of bilingual Singaporean families: social support networks.* In C.L. Keat and T.K. Aun (eds.) *Proceedings Research Across the Disciplines.* Singapore: Educational Research Association.

Vars, F.G. & Beane, A.J. (2000) *Integrative Curriculum in a standard-based world.* [Online] Viewed on 5th April 2002
http://ericps.crc.uiuc.edu/html .

Vygotsky, L. (1998) *Mind in Society: The Development of Higher Psychological Processes.* Cambridge , MA: Harvard University Press.

Wai, C. C. (2001) *Singapore e-Government Status.* Paper presented for Infocomm Development Authority of Singapore.

Wang, M. C., Haertel, G. D. & Walberg, H. J. (1993) *What Helps Students Learn? Educational Leadership,* 51(1), 74-79.

Warschauer, M. (1999) *Electronic literacies: Language, culture, and power in online education.* Mahwah, NJ: Erlbaum.

Web-Based Education Commission's Report to the President and Congress of the United States. (2000) *The power of the Internet for learning: Moving from promise to practice.*[Online] Viewed on 27th January 2001
http://interact.hpcnet.org/webcommission/index.htm.

Williams, M. D. (1999) *Integrating Technology into Teaching and Learning, Concepts and Application.* Singapore: National Institute of Education.

Williams, M. D. (2000) *Integrating Technology into Teaching and Learning, Concepts and Application; An Asia-Pacific Perspective.* Singapore: Prentice Hall, Pearson Education Asia Pte Ltd.

Winn, P. G. (1991) *Integrating of the Secondary School Library Media Centre into The Curriculum.* Englewood, Colorado: Libraries Unlimited.

Winter, S. & Chun Cheng Chun (1997) Classwide peer tutoring with or without reinforcement: Effectiveness of two versions compared. In Chen L. K. & Toh K. A. (Eds.) *Research Across the Discipline, Proceedings of Eleventh Annual Conference of the Singapore Education Research Association.* Sngapore:ERA.

Wray, D. (2001) Literacy in the Secondary Curriculum. *Reading,* 35(1), 12-17.

Yen, C. A. & Oei, K. (1997) Improving the learning of normal technical students in school by integrating computer technology with language tasks and activities. In Chen, L. K. & Toh K. A. (Eds.) *Proceedings Research Across the Disciplines.* Singapore: ERA.

Yeo, C.T. (2000) *Strategies to develop Singapore into an InfoComm hub.* (A speech delivered at the opening of Condex Asia, April 5, 2000) [Online] Viewed on 4 April 2001
http://www.ida.gov.sg/website/ida...d45dc82568b900116820?OpenDocument

Yeo, S. L. (2002) Library Utilization and Reading Patterns. *Statistics Singapore Newsletter,* 7-10. [Online] Viewed on 7th January 2003
www.singstat.gov.sg/ssn/feat/october2002/pg7-10.pdf

Yeo, S. H. J. (2002) Raising a Generation of Readers TELL .18 (2).

Yin, M. C. (1998) Nurturing the Singaporean Reader. *Literacy.* 32 (3), 33-35.

Zemelman, S., Daniels, H. & Bizar, M. (1999) Sixty Years of Reading Research – but who's listening? *Phi Delta Kappan*, 80(7), 513-517.

Zirinsky, D. &, Rau, S (2001) *A Classroom of Teenaged Readers: Nurturing Reading Processes in Senior High English.* New York: Longman.

Appendix 1 - The Concept of Work Improvement Teams (WITs)

A Work Improvement Team (WIT) undertakes the process of working through the Plan-Do-Check-Action (PDCA) cycle (see Table A) using a variety of tools and techniques to examine and analyse the problems. Examples of these tools and techniques include brainstorming, cause and effect diagrams, decision matrices and Gnatt charts. Teachers are involved in a range of projects, both classroom and non-classroom related.

The general practice requires that teachers complete projects and submit a written report to the WIT Coordinator. At one level, the WIT Coordinator reviews and evaluates the suggestions, with a committee comprising teachers. Suggestions are then disseminated to the respective departmental head who looks into the feasibility of implementing the solutions at a different level. Finally, solutions that are accepted would be implemented in consultation with the principal or vice-principal. Projects of high standards can also compete at a cluster, zone or national level for greater honours.

Table A: Plan-Do-Check-Action Cycle

Step 1 Plan The problem is identified, a schedule drawn up, the data collected, causes analysed, solutions are sourced and targets set.
Step 2 Do The plan of action is implemented.
Step 3 Check The action plan is reviewed and the results evaluated. It is at this point that two courses of action is possible. If the outcomes are acceptable and objectives are met, the recommendations will be made to the management to accept the change permanently. If on the other hand, targets are not met, the WIT will work through another cycle of plan, do, and check.
Step 4 Action Actions are standardised and changes will be reflected through proper channels such as manuals. The process will be monitored periodically to ensure that the results are maintained.

Source: Adapted from Work Improvement Teams for Schools, Singapore: Civil Service College, cited in Vivien Lee Looi Chng, (2000)

Appendix 2: Full WIT Report led by Mdm Bibi Jan

Team : FLASH

Project Tile : To increase the utilization of resources and computer facilities in the library

Problem : Low borrowing rate of print/non-print resources and low usage of computers in the library

Solution : To increase the borrowing rate of resources and usage of computers in the library

PARTICULARS OF TEAM

Facilitator:	Ms Pow Wee Wee	Teacher
Leader :	Mdm Bibi Jan Md Ayyub	Teacher
Members :	Ms Nisha Mehrun	Teacher
	Mrs Esther Teo	Teacher
	Mr Rama	Library Assistant

BACKGROUND OF TEAM

Date of WIT formation : 5 October 1999
No. of projects completed : 1
Estimated duration of project : 4 months
Average Attendance : 90%
Average no of meetings per month : 1

1. PROJECT SELECTION

1.1 The team brainstormed and identified 3 problems as follows

(A) Lack of responsibility of pupils
(B) Pupils do not sing the National Anthem with pride
(C) Low borrowing rate of print/non-print library resource

1.2 The team selected the most critical problem based on the following criteria :

I - Urgency
II - Improves on present situation
III - Easy to implement
IV - Increases morale
V - Benefits to teachers and pupils

2. PROJECT SCHEDULE

A project schedule was drawn up using the Gantt Chart .
No activities were planned for Nov-Dec 1999 with that being the school holidays.

3. THE PRESENT SITUATION

3.1 The school library is not very often visited by the pupils after school except on occasions when they need to attend activities e.g. book promotion , IS lesson.

3.2 There is a lack of borrowing of library books and CD Roms by the pupils and teachers as shown by the termly statistical reports.

3.3 There is also a low usage rate of the computers in the library. Most of the pupils who use the computers want to surf the internet but not many of the computers have internet access.

4. DATA COLLECTION

4.1 The library keeps loan records (by pupils and teachers) of its resources (i.e. books and CD Roms) and also records of users of the computers in the library. Data will be drawn from these records for the purpose of data collection .

4.2 The library stopped its borrowing of items from the beginning of October (4th week of Term 4) to prepare for stock checking to be done for the year. Hence, the data used was based on records obtained during the last five weeks of Term 3 (earlyAug -early Sept).

	Type of resource/facility use	No. of units	%	Cumulative %
(1)	Books	342	46.2	46.2
(2)	Computer Usage	216 *(no. of log-ins)*	29.1	75.3
(3)	CD Roms	183	24.7	100
	Total	741	100	

4.3 From the above table, results were further analysed with the aid of a pareto diagram:

5. TARGET SETTING

The team analysed the data collected and targeted to increase the number of the loans and users by 33.8% based on the table of confidence as shown below.

No.	Type of resource/facility use	No. of units	%	Confidence in % Increase	Target %
1	Books	342	46.1	30	13.8
2	Computer Usage	216	29.2	60	17.5
3	CD Rom	183	24.7	10	2.5
	Total	741	100	100	33.8

6. PROBLEM ANALYSIS

The team discussed and used the Fishbone Diagram to analyse the cause and effect of the problem. The causes that contributed to the problem were identified during our brainstorming session. (See Annex A)

7. DETERMINING CORRECTIVE ACTIONS

The team brainstormed for possible solutions to the problem and also discussed the pros and cons of each of the solutions.

8. SELECTION OF SOLUTIONS

Having weighed the pros and cons of each solution, the team then used the matrix decision matrix table in the selection of the proposed solutions.

9. IMPLEMENTATION

The following measures (except for 9.2) were implemented for a 5-week period between the 3rd week and 7th week of Term 1 (mid Jan - mid Feb 2000) The library was open to the pupils only on the 3rd week.

9.1 **To schedule classes for library visits.**

All Sec. One and Sec. Two classes were rostered to visit the library after school twice in Term 1. They were to read the books in the library during the 1 hour session and they were encouraged to borrow the books if they wish to. Pupils were briefed about this after-school reading program and letters were given to the parents to inform them about it.

9.2 **To replace existing flooring with heavy duty carpet**

The library was closed for renovation during the Nov-Dec holidays. The old carpet flooring was replaced with a heavy duty carpet type which does not require library users to take off their shoes as was needed before.

9.3 **To adjust the duty schedule of media prefects on library duty.**

The duty schedule was adjusted so that there would be a sufficient number of pupils on duty on each day of the week. Counter service would then be made readily available at all times for borrowers. It was decided that at least 6 pupils must be on duty on any day of the week.

9.4 **To equip teachers with some knowledge of the school library and its resources available.**

The media department conducted a 2-hour MRL Orientation program in Feb for the teachers. Among the activities conducted, an overview of the library regarding its facilities and resources was included.

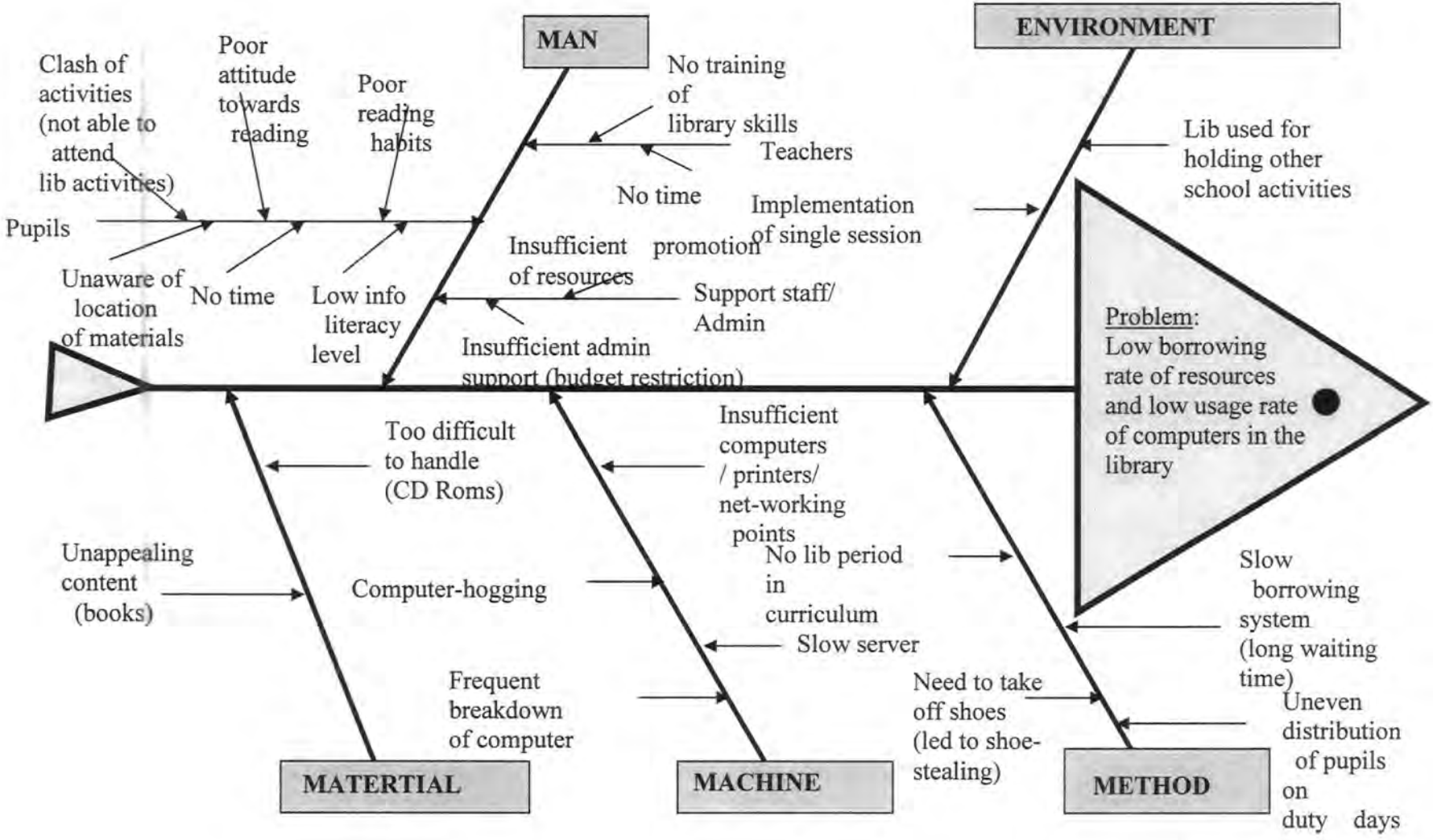
9.5 **To increase the number of computers with access to the internet**

The library installed an additional 6 computers and networked all, including the existing ones. Thus, all computers in the library would have internet access.

Appendix 3 - Fish Diagram of Project FLASH

ANNEX A

PROBLEM ANALYSIS



STAR PROJECT Student Workbook- Module1 :ATTITUDE

PING YI SECONDARY SCHOOL

NAME:_____

CLASS:_____

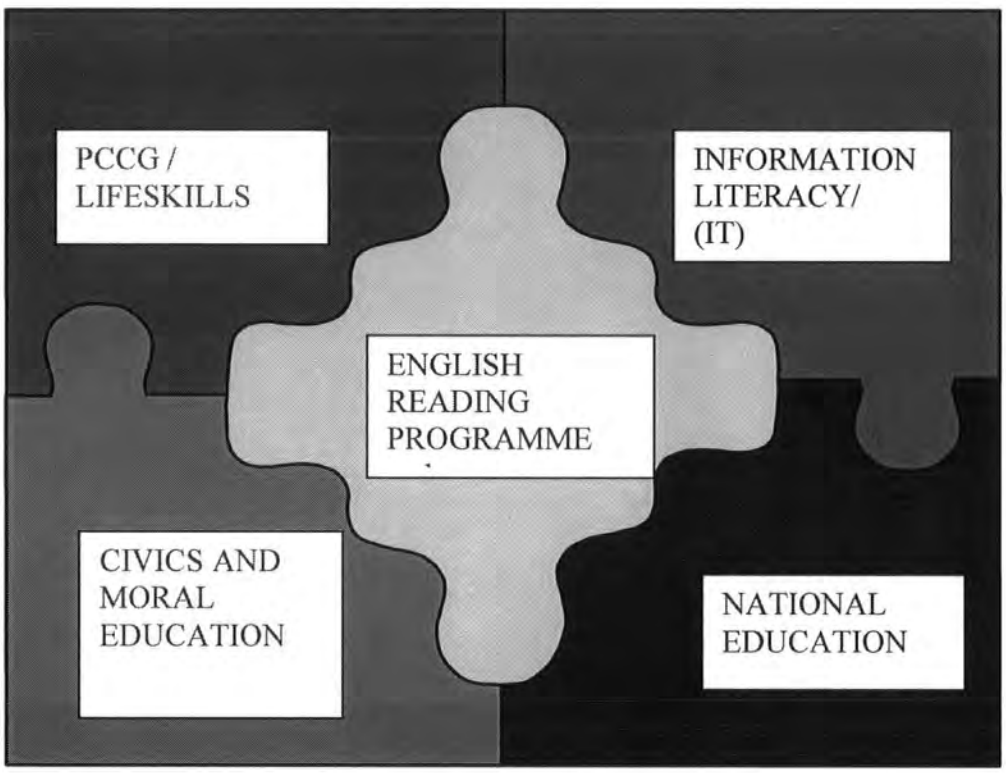
MY GROUP'S NAME:_____

TECHONOLOGICAL, POLITICAL, SOCIAL AND

In Collaboration with the Media and IT Department, the English Language and Pupil Welfare Departments

6 - IN - 1 PROGRAMME

STAR PROJECT
[STRIVING FOR TOTAL ACHIEVEMENT AND RESPONSIBILITY]



Proposed, conceptualised and initiated, pilot tested and implemented by
BIBI JAN MD AYYUB
Supported by Principal, Mr Tan Ah Kiang
VP, Mdm Wan CF, HOD IT, Mrs Carryn Leong, HOD EL, Mr. W Rozario
HOD PC , Mrs Mary Lim Assisted by Mr Low and his team

MODULES 1

ATTITUDE FOR SUCCESS

Executive Summary

Nothing affects your life more prfoundly than your attitude. A positive attitude is a priceless possesion. Attitude for Success shows you how to create a winning attitude using practical, common-sense strategies. Full of interactive role-plays, interesting self-assessment exercises, expert advice and commentary, Attitude for success will help you to become more positive, enthusiastic and professional.

This will help to improve the quality of your life and triggers enthusiasm in everyday life. A winning attitude also builds positive approaches to problem-solving while boosting your self-image by enhancing your appearance. Attitude for successs also helps you to increase your confidence while enhancing your creativity.

TASK SHEET

CONGRATULATIONS! You have been selected to our new PING YI SWAT

TEAM that is a SPECIAL WINNING ATTITUDE TEAM

❖ **What is this project about?**

- **A team that undergo the pilot test in our 6-in-1 programme with the main objective of helping you to recognise the importance of positive and winning attitude in life and to change your mindset towards enhancing your self-esteem and your overall well-being.**

❖ **You can become a PING YI SWAT TEAM member by :**

- **going through this programme conscientiously**
- **you must make attempt to work towards developing positive and winning attitude' in every aspect of your life**
- **you should be able to produce some tangible work as part of the assessment and this would be reflected in the development of your portfolio**
- **Besides the development of personal values and lifeskills, you will be able to pick up other important skills along the way, for eg, reading, information and digital literacy, political literacy and finally, critical and thinking skills.**

Content

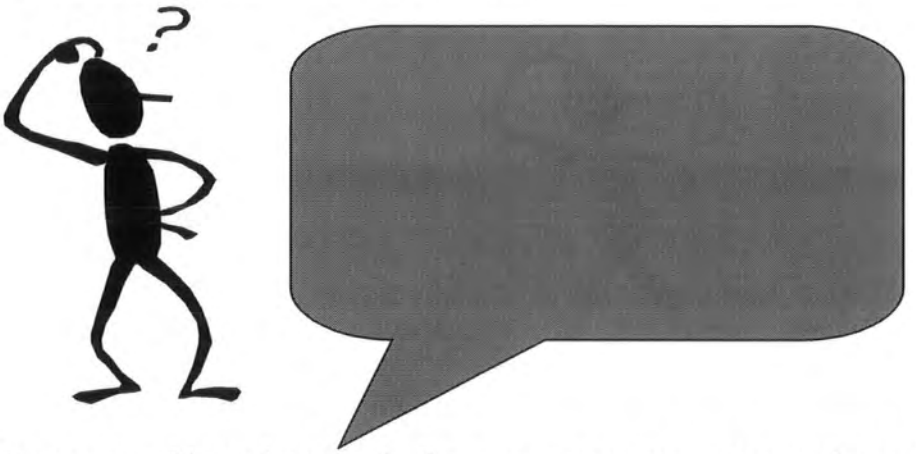
PHASE 1

FINDING MEANING

Task 1 – Introduction

Pre-CD ROM viewing exercise - Individual task

My definition of attitude is as .....



Choose an object that symbolises or represents your understanding of the concept "ATTITUDE" and explain your selection briefly

I choose .....

This is because.....

FINDING MEANING

Group Task

With your group members, do a ***"word splash"*** on your understanding of the concept **'ATTITUDE'**

Attitude

Attitude

FINDING MEANING

After going through the sharing session with your friends, choose any three of your friends' "symbols" and record them in the table given below.

Name of my friend	The Symbol chosen by him/her	Reasons given by him/her

PHASE 2

THINKING THROUGH

Refer to your CD-ROM now. As you view the programme, answer the following:

(The first answer is given as an example)
The **four** things that Attitude can influence our lives are:

A) Our Work

B)

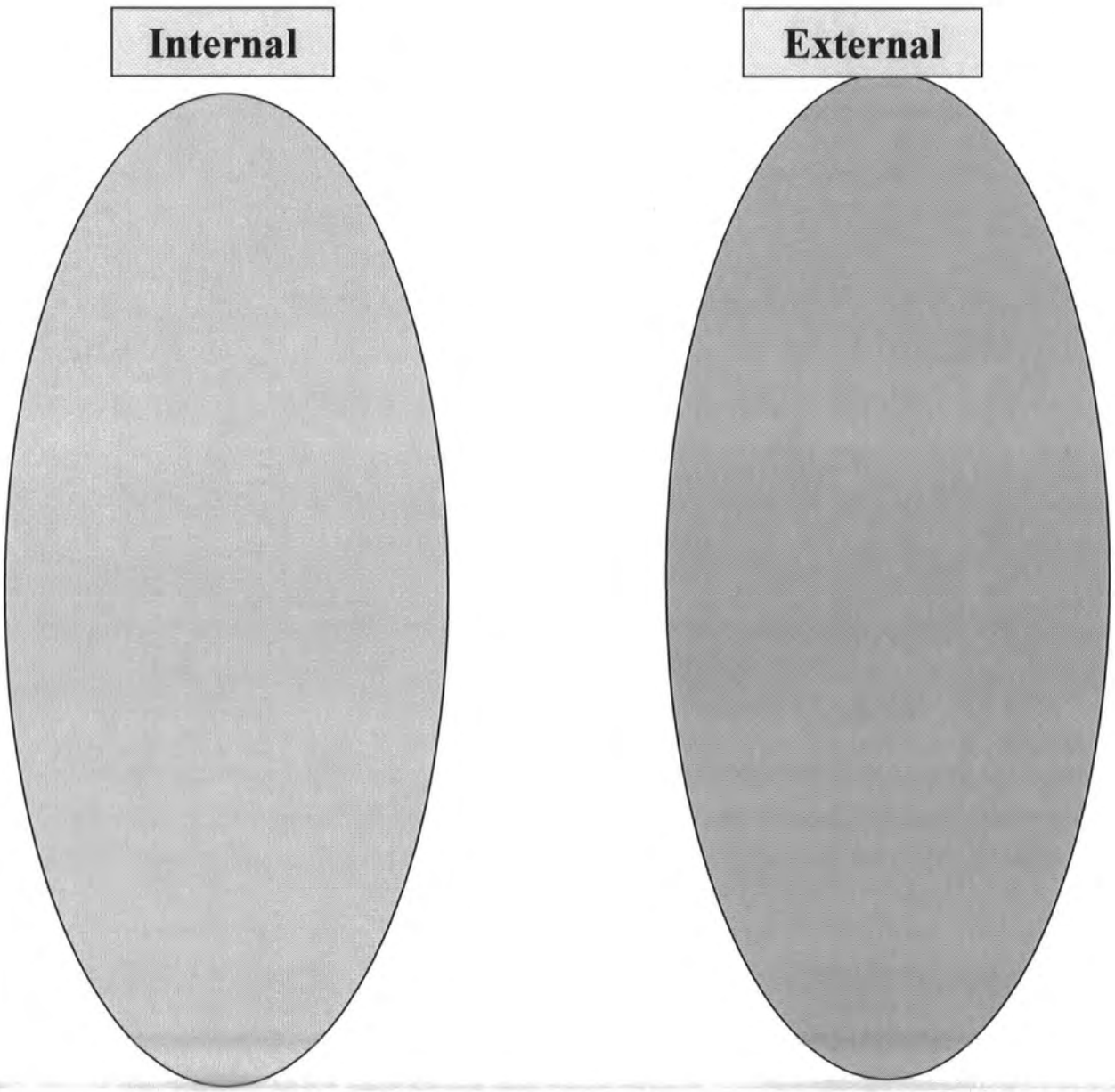
C)

D)

Choose a minimum of 3 words to describe your conclusion about your very own understanding on the concept of attitude and write it in capital letters in the box given below

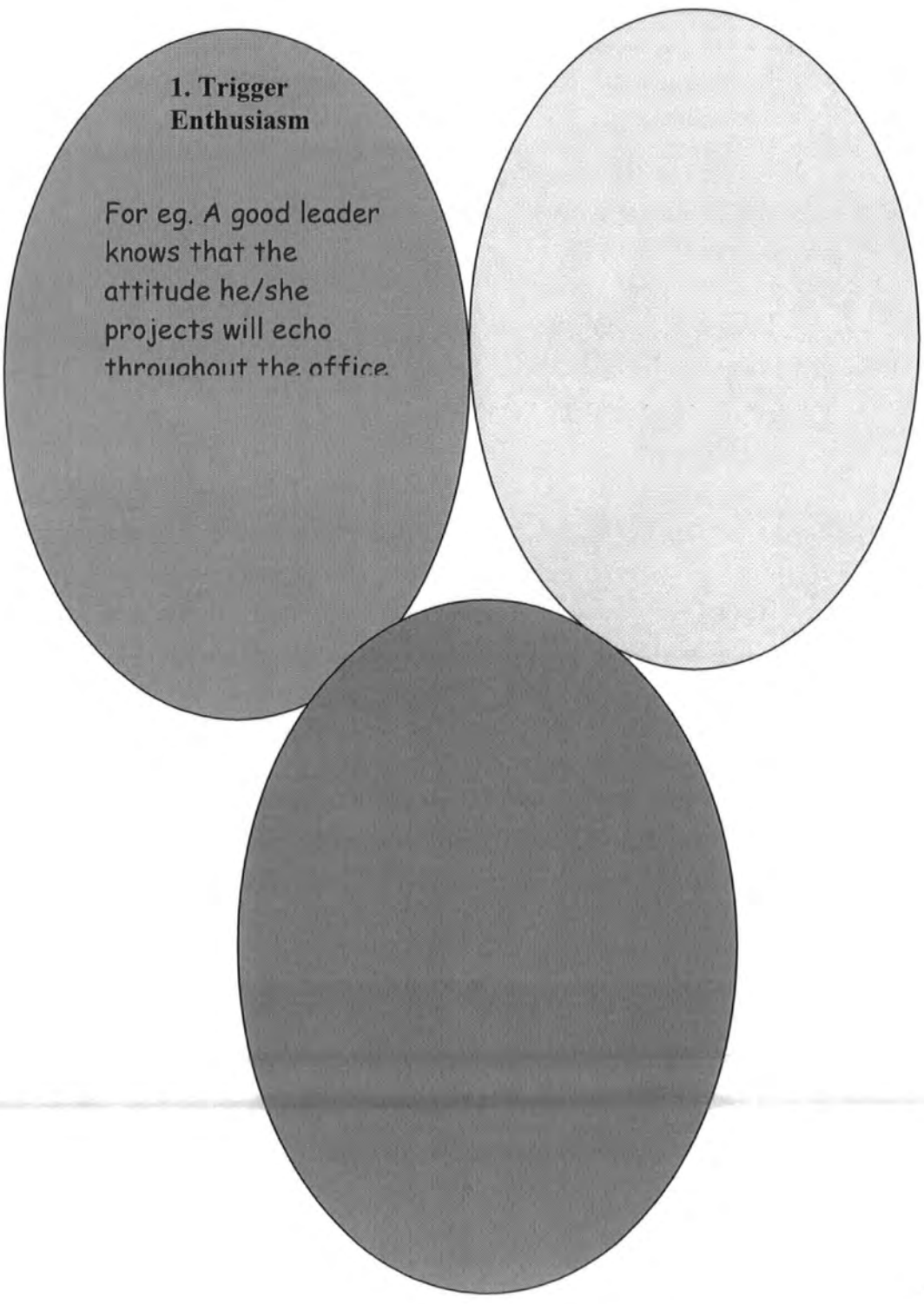
THINKING THROUGH

There are two components or dimensions of attitudes as presented in the CD ROM. State the meaning of the two concepts in the two circles given respectively.



THINKING THROUGH

The magic of being positive or having good attitude gives you 3 natural advantages. Give certain examples for each advantage. They are: -



THINKING THROUGH

"If you think you can, or if you think you can't, you are right."

Henry Ford

Now, based on what you have heard from the discussion raised in the CD-ROM, fill up this simple slogan with any suitable and interesting verbs.

A negative attitude _____ energy.

A positive attitude _____energy.

What are some of the suitable words that have been used by your friends? Fill in those interesting verbs in the spaces provided.

THINKING THROUGH

Write down 3 Factors that impact our attitudes. The first one has been done for you.

Factors the impact our attitude	Some examples
1. Environmental shockwaves	For eg. personal disappointments, illness, financial setbacks, emotional distress
2.	
3.	

Food for Thought.....

"Learning without thinking is useless
Thinking without learning is dangerous"

Confucius

THINKING THROUGH

According to the presentation made in the CD-ROM, there are 8 ways to renew or to adjust our attitudes. Write ALL the strategies and include some details to help you understand the meaning of each technique.

Type of attitude adjustments	Some interesting pointers and details about the technique
The 'Flipside' technique	♦ Finding the funny side to any difficulty ♦ Using humour to overcome negative situations. ♦

PHASE 3

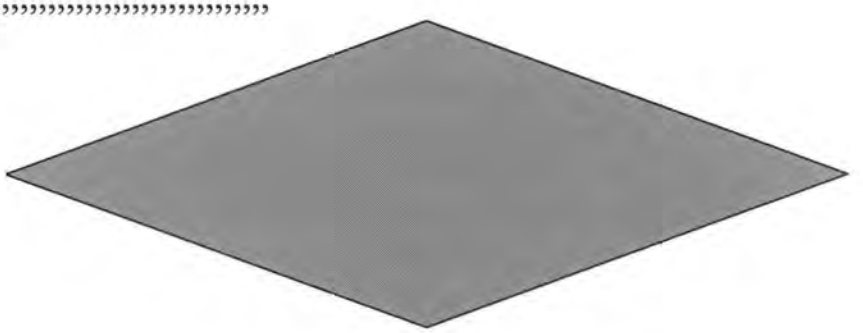
APPLYING AND INTERNALISING

TAKING A STOCK OF MYSELF

Do I have a winning attitude. If you want to find out yourself please go to
http://www.uiuc.edu/departments/mckinley/health-info/hlthpro/selfestm/pos-thnk.html
Please fill in the following:

My score is .....

The Result is ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,



Seek out the resources and information suggested to enhance positive thinking and achieve greater self-understanding and awareness

Other resources

Johnston, W.W. (1990) " 12 ways to make yourself absolutely miserable: And how to conquer them (page 102-105)

APPLYING AND INTERNALISING

Read the three real life stories of 'winning attitude' downloaded from the internet. These are the work of the students from the Northern America. There are extracted from The Kid's Zone's website.

APPLYING AND INTERNALISING

After reading the 3 true-life stories given above, think of one similar story that you had experienced , your very own version of success in life, and write it down in the box given below.

My success story

APPLYING AND INTERNALISING

Case Study - Creative and Skilful problem Solving

Rozy, your classmate is always 'picked' by the Discipline Mistress, who happened to be her form teacher and English language teacher. She likes to have the 'good' feeling factor by putting on make up when going to school. (That was the only 'offence' she has committed). She has been warned many times by the Discipline Mistress and other teachers. As a result, she began to lose interest in her studies. She could not stand the sight of her English language teacher, trying to avoid her by skipping her EL lessons. This has affected her overall performance in the examination. As a caring and concerned friend, what can you do as a group to 'help' Rozy?

Based on what you have learnt about the positive and winning attitude, and the various steps of the Problem solving skills technique, use the following flow chart to address the above-mentioned problem. (All the steps of problem solving are enclosed for your reading and reference)

IDEA BANK

The problem

Ideas/Solutions considered

Final/Modified Solution

Try out the solution

APPLYING AND INTERNALISING

Post Viewing Exercise

3-2-1 EXERCISE

Three things that I've learnt so far … …

Two values that I have appreciated in the process of going through this activity are

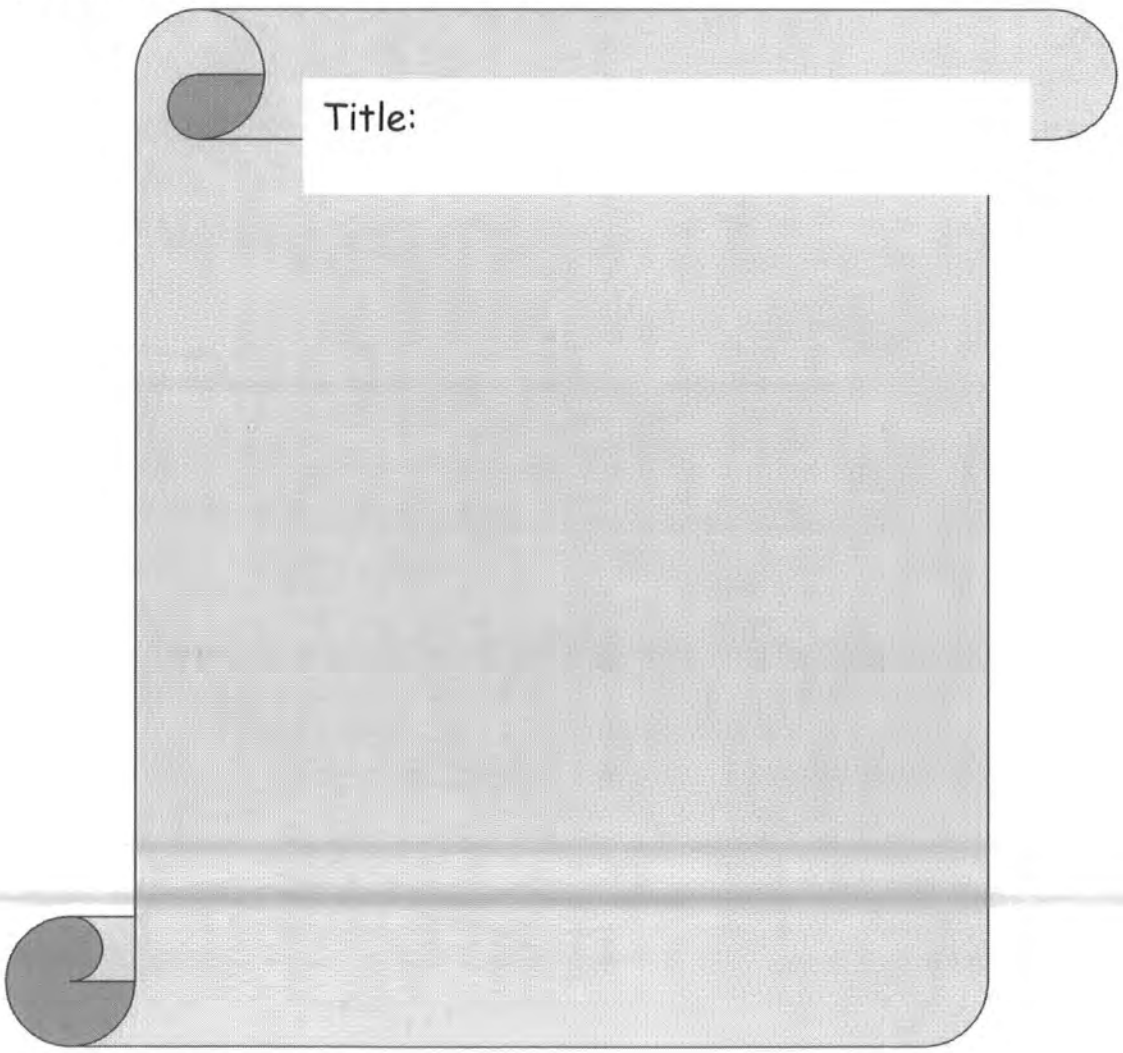
One aspect of change that I would like to carry out within myself is…

Phase 4

Reconstructing and exploring

Relate a true story of any person, could be famous sportsmen, artists, (for example, Tina Turner, Jackie Chan, Norleena Salim, Anthony Robbins, Bill Gates) or someone you know or have read about that has changed his or her attitude and that has brought him or her success. (You can carry out E-research on this topic)

Then, please write your short story in the space provided. The last part of this story should include your personal input on what you have learnt from such story.



Reconstructing and exploring

The concept of developing a winning attitude is not a new phenomenon. In fact, it is a universal one. In our local contexts, similar values are found in various ethnic cultures. Can you identify some proverbs, rhymes, traditional folk tales or traditional sayings that are closely linked with this concept?

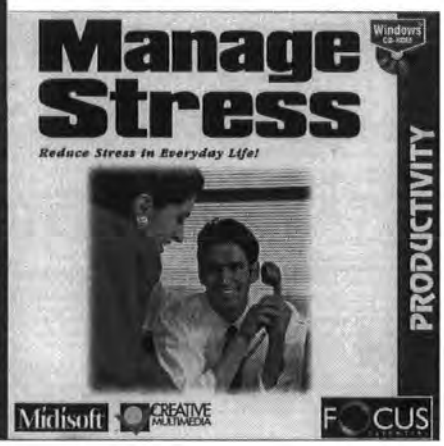
Reconstructing and exploring

Imagine that you are a student leader and you were asked to produce an information leaflets for the new Sec one students for the orientation programme. Besides welcoming them, include some tips on how they could develop a positive attitude towards the new school that they are in and the whole process of schooling.

Reconstructing and exploring

After reading the November 2000 Total Defence Newsletter that your teacher has given you, and in view with what you have learnt form this module, how does developing a positive attitude and being productive and future workers relate to this idea of economic defence? Brainstorm within your group and list down what you have thought and discussed about on this page.

Appendix 5 – Cover pages of CD series used in the STAR project.



Appendix 6 - Sample of Pre-Test Survey and Post test*

S.T.A.R. CAMP 2002 PRE-TEST

Your active participation in the coming STAR camp is greatly appreciated. The programme will be successful with your kind help, honest comments, support and co-operation. Do give me any comments, suggestion, feedback that would help me to further improve the implementation of this activity later, at the end of the programme.

Thank you for your kind cooperation

Please fill up or out a tick (√) in the box □ provided below.

1. My name: _____2 .Class/Stream _____3. Sex: F / M

4. My parents' highest qualification:

Mother _____ Father_____

5. I live in a 2-room HDB flat□, 3-room HDB flat□, 4-room HDB flat□,

5-room HDB flat □ Private house□ Others □ (Specify)

_____

6. Do you have a PC (personal computer) at home? □ YES □ NO

7. Do you have access to internet? □ NO □ YES (specify)

_____

8. How often do you spent your time on computer per day? _____(estimate the no. of hours)

More than 2_____ Less than 2_____ Others_____

9. What do you do most with the computer?

9.1Entertainment like playing games, □

9.2 Chatting and checking personal emails □

9.3 Educational purposes, eg research, project work □

* Similar questionnaire was given after the implementation of the STAR reading programme

Part 1– General information on reading habits and English Proficiency

Fill up the responses using the following answers:

SA = Strongly Agree, A = Agree, N= Neutral (Neither Disagree nor Agree), D = Disagree, SD = Strongly Disagree

No	Statements	SA	A	N	D	SD	Remarks
R1	Reading is a very important part of my life						
R2	I read many different types of books, (mystery, fiction, nonfictions, romance, etc.). (Please specify in the remarks column the kind of books you read)						
R3	I would read only for school assignments And examinations						
R4	I do both 'normal' reading (using print materials like books, magazines, newspaper) and online						
R5	I prefer to read in my MT						
EL1	I am weak in my English						
EL2	I can speak and write good English without much difficulties						
EL3	I know what to do to improve my English language proficiency (list some possible ways)						
EL4	I think I am more expressive and more competent in my mother Tongue than English						

Please rate how proficient you feel/think/rate in the following skills from 1 =NO SKILL (not at all proficient and would like assistance) to 7=EXPERT (extremely proficient, no assistance required)

EXPERT NO SKILL

(Very skilful) (No skill at All)

LifeSkills	7	6	5	4	3	2	1
Reading skills	7	6	5	4	3	2	1
Communication skills	7	6	5	4	3	2	1
Planning and management skills	7	6	5	4	3	2	1
Thinking and creativity	7	6	5	4	3	2	1
Problem solving skills	7	6	5	4	3	2	1
Relationship skills	7	6	5	4	3	2	1
Computer skills (delete if not applicable, software, hardware,)	7	6	5	4	3	2	1

My learning style/preference: Please tick □ the type of learner you think you are

A **V** learner □ An **A** learner □ A**K** learner □ , I have no idea what kind of learner I am □

MORAL LITERACY (personal value, personal attitude)

Part 3 – Concept of Attitude

No	Statements	SA	A	N	D	SD	Other
A1	I believe that my attitude determined my success in life						
A2	I know how to develop positive attitude in me						
A3	My CME teachers stress on the importance of positive attitude in life						
A4	I believe that I have no control over my life						
A5	My Religion/Belief is very important to me						

NE

No	Statements	SA	A	N	D	SD	Other Remarks
NE1	I am very familiar with all the six NE messages						
NE2	I understand all the six NE messages						
NE3	As a student, my responsibility now is to work hard, get good grades and equipping my self with the relevant knowledge and skills for future job						
NE4	I understand fully the concept of Total Defence as being taught formally and informally by my school						
NE5	I believe that fostering racial harmony begin with me, my attitude and relationship with other people of different race, language and religion						
NE6	Most of my friends are people of the same race, religions and language						

TECHNOLOGICAL LITERACY (Computer, information, media)

Part 3– Degree of computer literacy

No	Statements	SA	A	N	D	SD	Remarks
TL1	I am very proficient with all Window application softwares						Name a few
TL2	I always make full use of the computer facilities in the school						
TL3	I believe that my future is very much dependent on my level of computer literacy						
TL4	I feel very confident using a computer for my presentations at school						

Appendix 7 - Camp Booklet and Programme

PING YI SECONDARY SCHOOL

S.T.A.R. CAMP

MAY 24-25, 2002

NAME _____

CLASS_____

The STAR Camp Theme

NEW ME WITH NEW LITERACIES

Our school Philosophy: **All** Ping Yians **CAN learn, achieve and contribute**

Our school Vision**: Caring and Thinking Life-long learners**

Our school mission: To **provide** Ping Yians with **opportunities** to realize their **potentials** and nurture them into **responsible and caring individuals, and thinking lifelong learners**

The world today is very different from the world 10 or 20 years ago. As change will occur at an even faster rate, we can expect the world in 10 or 20 years' time to be radically different from the one we see today. Our capacity to learn, as individuals and as a nation, will decide our future, whether we stagnate, perish, or continue to succeed."

Mr. Goh Chok Tong (PM)

"THE GREAT TRAGEDY IS THAT MANY STUDENTS SPEND THEIR ENTIRE LIVES LEARNING AND IT WILL NEVER OCCUR TO THEM THAT THEY SHOULD COMMIT THEMSELVES TO BECOMING EFFECTIVE AT IT AND ENJOY THE WHOLE PROCESS WHICH COULD BENEFIT THEMSELVES AND OTHERS"(*Madam Bibi Jan)

3. STAR CAMP 2002 CONTENT

4. Background Information

The STAR Project is a multi-media enrichment programme, systematically designed and crafted for Ping Yi pupils, using the integrative curriculum concept, combining six disciplines, namely, English Language, Life-skills, Character Education, National Education, Thinking Skills and Information and communication Technology. It is a school-based collaborative action research involving IT, English and Pupil Welfare Department. STAR is an acronym for Striving for Total Achievement and Responsibility, from students' perspective. The five-pointed star represents the five different disciplines as mentioned on the above, with the red one that has the face on it, represents the component of self-literacy. The small white star in the middle is the language element, which manifests the core component for the different forms of literacy.

5. Rationale and Objectives

It is part of the reading programme to promote new literacies, with the main aim of equipping the pupils with 21st century skills. According to Colburn (1999, Leu and Kinzer, 2000) students today need to become proficient with many new and different

types of literacy.) This enrichment in the form of intervention, would expect the students that participate in it, would be able to acquire not only 'new' knowledge in various aspects of different disciplines, but also skills and attitude that help them to be a productive students and 'enlightened' worker should they join the labour force. In order for the students to meet personal, industry, business and government expectations, they must be able, other than before, to reason, solve problems, apply their understanding, and write and speak well. (National Educational Goals, United States and Thinking School Learning Nation, MOE Singapore). Students should be able to handle new situations and, meet various forms of new challenges. The main objectives are as follows:

- To expose students to different concepts of new literacies
- To provide them opportunities to know more about themselves, the community and the constant changing world that they are living in
- To inculcate positive and winning attitude and values in themselves
- To help painting the 'big picture' or simplified scenario setting
- To promote collaboration and teamwork among the pupils of different levels, academic stream, race, religion, language and culture for greater understanding, appreciation and acceptance
- To promote entrepreneurship skills among pupils
- To establish a link between the newly acquired knowledge and skills learns to practical application through participation in service learning, entrepreneurship training skills, career counseling programme.
- To motivate them by bringing 'experts' in different fields so that they could hear from the so-called, the 'horses' mouths)

6. The S.T.A.R. CAMP general Goals

To acquire knowledge and skills and develop desirable attitudes in the following domains:

- Functional literacy
- Economic literacy and entrepreneur skills
- Self literacy
- Technological literacy
- Cultural literacy
- Critical literacy
- Moral literacy

Specific Objectives 1- (Functional literacy -reading and language development)

To stimulate an interest in reading for pleasure through multi-media

To extend reading beyond the conventional means and place – that is beyond books and classroom/library settings

To improve general skills in English language competency - oral, aural and writing

Specific Objectives 2 - (Personal development/cultural)

To enrich pupils' experiences in life

To promote personal and social development of pupils

To inculcate desirable values and promote character building

To Increase interpersonal skills through group work or collective assignments

Specific Objectives 3 (IT, NE, Thinking)

- *To promote and integrate Electronic Information Skills for better mastery of Information literacy*
- *To increase greater use of IT among students and prepare them for a knowledge-based economy*
- *To promote thinking and creativity through the tasks given*
- To enhance pupils' awareness on NE which include economic, political and social literacy

Camp Venues:

1. Mass Lecture-AV Theatre
2. Computer Hands On- Lab 3 and 4
3. Group activities-Innovation Room
4. Meals-Canteen
5. Sleeping room (Boys)-Music Room
6. Sleeping Room (Girls)-Teachers Resource Room

7. CAMP Personnel

Overall Teacher-in-charge	Madam Bibi Jan
Invited/Guest speakers	Ms Bahashwan – Psychologist and school social worker Ms Ramesh Ramachandra – prominent Asian woman Entrepreneur Mr Zainul Abidin Isahak – NLP trained youth worker Mr Willi Yuen (Chairman PSG) Insurance Personnel Mr Ahmad Khir – IT specialist
Student Advisors/ facilitators	Muhammad AlImran (401) Sear Hock Rong (512) Nigel, Shameer, Omar, Nordin, Khartik, Yvonne, Heeru,
Camera Crew	Kenneth
Video operators	Rinaldi/Marcus–204
Discipline control	Ayub and Iskandar (201)
Food and Beverage	Fauzi and Syahidil of 413
AudioVisual Aids	Mr Helmi
Stationery	Zohri and Indra (413)
Learning Circle leaders members	Kenneth Ow, Theresa, Laxmi, Lim Shun Zhen, Kok Hong, Ayub, Iskandar, Theresa, Angkhana, Husna, Raudha, Kelly, Ahmad Syed, Fairuz Rashad,

10. The ABC's of Camp Conduct

1. **Attire**
   - Since the camp is in school, please put on you formal or informal school uniform throughout the formal session of the training
   - We have brought in 7 invited speakers from different organizations to share with you their knowledge and experiences. It's fair that you show respect by having proper attire. The

school conducts the Meet Parent sessions on Friday and Saturday. There will be many parents that come to the school on these two days.

- Create good impression and image of ourselves and our school

2. **Attitude**
   - Display a positive attitude throughout the two day camp, after all the main objective is to develop and reinforced such attribute and quality in you
   - Maximise and optimize all your training sessions by being attentive, listen and learn as much as you can
   - Follow all the instruction s given by your trainers and facilitators
   - Give your full heart and mind to all the tasks given so that they could be showcased in the iTopia 2000, organized by the MOE
   - Have a sense of pride, develop your inner strength and potential and exploit all the opportunities opened up to you.
   - Do not show apathy or indifferent attitude as it reflects badly on you.

3. **Behaviour**
   - Put your best behaviour throughout the camp, whether you are in the AVA, Labs, Canteen, or even in your "rooms"
   - Complete all the tasks given in the pretest, post test, workbook, learning log and reflective journal
   - Boys are not allowed to enter the girls' rooms and vice versa
   - Though you or your parents are not paying for this training, show appreciation to the teacher in charge and all the trainers by putting effort in all the work done. That will help to ensure the meeting of the desired outcome as spelt out during the briefings given to you.

4. **Content Acquisition and Mastery of skills**
   - Try to absorb as much as you can from all those highly qualified trainers and invited speakers as these are a very rare opportunity to get hold of them
   - Ask questions whenever in doubt.

5. **Contribute**
   - Contribute as much as you can, to your self, your group, your community and everyone around you.
   - Always be a 'giver' and not simply a ' taker' (giver of idea, knowledge, energy, time....)
   - This will be applied through the service learning programme to encourage the SWAT STAR camp participants to contribute to the needy

10. The DO's and DON'Ts "Rules and Regulations"

DO'S

1. **Be ON TIME for all sessions**
2. **Participate 100%**
3. **Obey instructions at all times**
4. **Stay together in teams**
5. **Report to teachers in case where participants have specific medical complaints such as giddiness, feeling or being unwell or having flu-like symptoms**
6. **Keep your Toilet and the used rooms clean at all time.**
7. **Be considerate to everyone**

DON'TS

1. **Do not Leave the school compound without permission**
2. **No littering, fighting or quarrelling during your stay in camp.**
3. **No food is to be cooked or eaten in any room. Meals should be consumed at the designated area.**

11. Expectation –condition for maximum results

- **Believe In Yourself- The Key To New You Is In Your Hand**
- **Everyone Can Study And Can Achieve**

- **Life Is A Choice, Choose To Be A Winner**
- **Where There Is A Will, There Is A Way**
- **Be Positive, Think Positive And Act Positive**
- **Do Proud To The School By Being Productive Students**

12. Things to bring

1. CLOTHING

- 1 set School Uniform (sec 4 only)
- 1 long pair pants
- 2 sets of undergarments
- 2 to 3 P.E. T-shirts
- FOOTWARE – **School Shoe**
- Sandals / Slippers (to be used after formal session)

2. STATIONERY

- Writing materials
- Colour pencils
  Magic markers

3.OPTIONAL ITEMS

- Torchlight
- Prayer mat (for the Muslim pupils)
- Sleeping bag
- Towel and other personal items like soap, toothbrush and tooth-paste, etc

13. Lists of participants

Class	Name		
201	1. Asha Devi, 2.Ratna Devi 3 Iskandar 4 Mohd Ayub 5 Timothy 6 Jong Yuanming Kevin, Hua Zheng	202	8 Sarah Khairullah
203	9 Kenneth Ow Chao Wei 10 Poon Yan Yee,11 Koh Yee Yong 12 Chai Wen Xi	204	13 K. Renganathan 14 Diana Puteri Razmara 15 Rinaldi
211 213	 16 Kwek Yew Joo 17 Kong Zi Liang 18 Lewis Koh 19 Muhammad Farhan bin Jamil 20 Gabriel Goh	212	21 Tan Kok Hong 22 Siti Raudah 23 Suhaila Bte Shamsudeen 24 Lim Linzhen Theresa 25 Chow Angkhana 26 Amir Khan 27 Chew Kah Leong 28 Muhammad Hafiz bin Kamaruddin 29 Kiddul Putra Safra Bin Hussain
221		222	30 Faridah Hassan, 31 Siti Marlina Selamat 32 Khairunnisa, 33.Md Reza 34 Nur Nadiah bte A Raman 35 Tan Zi ling, Tan Cher Lin 36 Zabir Shah 37 Huang Rui Quan
301	38 Kong Wei Zhen 39 Soh Xiu Ting,40 Chan Poh Chin	302	41 Nordin Bin Abdullah
303	42 Md Farhan Rashid	304	
311	43 Nurul Husna Bte Feroz Khan 44 Kellie Teo, 45 Raudhah 46 Lim Wei Goo, Roy	312	
321		322	
401	47 Sharifah Nooraida 48 Nor Azman Bin Mohd Rohman	402	49 Rasyad Bin Taha Ajunied,50 Ahmad Syed 51 Md. Firdaus bin Hassan
403		411	
412	52 Malissa Illyana bte Amran	413	53 Letchmi ,54 Lim Shun Zhen55 Tan Xiu Li , 56 Samsani 57 M.Basyir 58 Zohri 59 Indra
421	60Syed Aliyy.61 Ratonel Bryan 62 Dennis Shen Guoqiang 63 Mohd Syafiek	422	64 Noorislia Bte Misdulah 65 Nor Farfanah

14. TRAINERS, RESOURCE PERSONS AND FACILITATORS (CV)

Ms Bahashwan

A Recipient of the "Friend of MCD Award" and was nominated for the Best Social Worker Award. Ms Bahashwan is a highly qualified Psychologist and experienced Family counselor. She graduated from National University of Singapore in Social Work (1981). In 1995 she received her Masters in Psychology from University of Surrey, UK She is very actively involved in many committees and organization such as Society Against Family Violence, Counselling and Care center, National Council Against Drug Abuse (NCADA) Working Group on Halfway Houses, Association of Muslim Professionals, Family Court and Ministry of Community Development and Sports

1. Madam Bibi Jan

A teacher and CME Coordinator for 22 years, she is very interested in the total and holistic development of the pupil. She has initiated 4 school-based action researches based on environmental education, empowerment of youth for the 'at risk' and the potential premature school-leavers programme, parent support group and finally the multi literacy programme. She obtained her Master of Education from NUS in 1993 and currently pursuing her doctorate at the University of Durham.

2. **Ms Ramesh Ramachandra**

Recognized by Asia week as one of Asia's most influential women and featured as one of the emerging breed of entrepreneurs in Singapore, Ms. Ramachandra is a Director with 3R Holdings Pte Ltd. Ramesh has founded and run several businesses. She has raised successfully venture funds, set up regional offices, managed business mergers, took charge of a public offering (IPO) application process as well as undertaken the liquidation process of a failed business. She has a MBA (International Business and Entrepreneurship) from Monash University and New York University's Stern Business School.

3. Mr. Zainul Abidin Isahak

Mr. Zainul is a social worker, a graduate from the University of Edith Cowan in Australia. He has keen interest in working with young adults and has been very active with various social organizations in Singapore. He is also trained in NLP

4. Mr. Willi Yuen

He is the Chairman of the Ping Yi Parent Support Group for the past three years and has great interest in the welfare of all the Ping Yians in his heart. Being in sales line and holding other administrative and managerial positions, Mr. Willi Yuen is in the thick of this KBE and definitely knows the requirement of the Knowledge Worker.

5. Mr. Ahmad Khir Khalid

As a member of the net generation, Mr. Khir is a highly qualified young technoprenuer, who has the experience working with the government and private sectors in various IT projects (Advanced Diploma in Computing (Data Comms) and NCC Diploma in Computer Studies). Currently working with Schneider Electric Pte Ltd.

6. Mr Zainal Abidin Ibrahim

A graduate from NUS, a newsreader from Channel News Asia, Mr Zainal has more than 20 years experience in journalism and broadcasting and public relation. His exposure and expertise in various aspects of functional literacy in the English language will be helpful for our students in Ping Yi.

Ping Yi Secondary School

May 20 2002

Dear Parents/Guardians,

Congratulation! Your child is among the 40 students of the school who has been selected to participate in the upcoming STAR camp organized by the school as part of the STAR Project - a school-based multi literacy programme specifically designed to equip pupils with 21st century skills. The STAR Project will be showcased in the iTopia 2002 (IT Opportunities, Innovation & Achievement Education), which is a milestone event to celebrate the successful completion of the master plan for IT in education organized by the Ministry of Education (http://www1.moe.edu.sg/itopia).

For your information, the STAR Project is a multi-media enrichment programme, which is using the integrative curriculum concept. It combines six disciplines, namely; English Language, Life-skills, Character Education, National Education, Thinking Skills and Technological Literacy. In addition, we are introducing entrepreneurial skills and service learning training for your child. It is a residential camp and the particulars of the camp are as follows:

Date: 24th to 25th May 2002
Duration: 2 days and 1 night
Time: Usual school day on the 24th and up to 9.00pm on Saturday night
Venue: School

Among the STAR camp trainers are Ms Bahashwan, a qualified psychologist, Mr. Zainul Abidin Isahak, a trained counsellor, Ms Ramesh Ramachandra, a prominent woman entrepreneur in Asia (featured by Asia Week), Mr Ahmad Khir, an IT specialist, Mr Zainul Abidin Ibrahim, Channel News Asia newsreader, and Mr Willi Yuen, the chairman of the Parent Support Group. The full cost of the camp is $250 per student (inclusive of training fee, meals and course materials). However, the school will absorb the whole cost as we are trying to get grants from relevant authorities.

Please understand that while every precaution has been taken to ensure the safety of your child, the school shall not be liable to indemnify the pupil against any injury throughout the camp. For any clarification, please call the teacher in-charge of the STAR project; Madam Bibi Jan at 64490328 or email her at jmbibi@moe.edu.sg Thank you.

Yours sincerely,

Mr Tan Ah Kiang (Principal)

RESPONSE SLIP

Name of pupil:..... *Class:*.....

Name of parent/guardian:.....*Relationship:*..... *Yes! I agree to allow my child to participate in the 2-day Stay-in STAR Camp* and *will not hold the organizer or the school responsible for any accident that may happen*

☐ *No, I do not allow my child to take part in the camp*

☐ *I want the school to fully sponsor my child*

☐ *I want to pay the $250 camp fee.*

_____ _____

Parent's/guardian's Signature *Date*

Ping Yi Secondary School

May 20 2002

Dear FM of secondary 2,3 and 4,

The school is organizing a STAR Camp to promote "new literacy" among our Ping Yians as part of the school STAR project. This includes self, technological, cultural and economic literacy. The students are selected on random basis. The STAR Project will be showcased in the iTopia 2002 (IT Opportunities, Innovation & Achievement Education), which is a milestone event to celebrate the successful completion of the master plan for IT in education organized by the Ministry of Education (http://www1.moe.edu.sg/itopia).

The STAR camp It is a residential camp and the particulars of the camp are as follows:
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Among the STAR camp trainers are Ms Bahashwan, a qualified psychologist, Mr Zainul Abidin Isahak, a trained counsellor, Ms Ramesh Ramachandra, a prominent woman entrepreneur in Asia (featured by Asia Week), Mr Ahmad Khir, an IT specialist, and Mr Willi Yuen, the chairman of the Parent Support Group.

I would like to seek your kind assistance in the following ways:

1. Distribute the " letters to parents" to students whose name are highlighted in the class name list
2. Collect the letters from them the next day –Wed May 23, 2002
3. Excuse the students who agree to participate from the cleaning exercise on Friday because the camp program starts at 8 am.
4. Inform them about the camp briefing on Thursday

You support and understanding is greatly appreciated, especially at this time of the week. You may want to ask the monitor to help you.

Thank you.

Yours sincerely,

Bibi Jan

Star Camp Member Contract

As a way to show my gratitude to the school for sponsoring me in this project, I,_____, agree to fully participate giving my 100% effort in making the STAR camp a success.

I am committed to actively contribute toward preparing the school STAR Project team during the iTopia 2002.

Signature of member ***Signature of witness***

_____ _____

May23,2002 **May23,2002**

My Learning Log and Reflective journal

Name:_____

Class:_____

What is a Learning Log?

It is for you to record all the learning that takes place while undergoing the STAR project. This self-assessment tool will help you to chart your own progress in six areas. There are your self and technological literacy, your thinking and critical literacy, your reading skills and the overall improvement in the English Language, the content of Module 1 on developing positive and winning attitude, and finally your internalisation of personal and national values.

The purpose of the Learning Log is to:

1. record every time you learn 'something' based what is covered in STAR
2. enable you to revisit and reflect what you have learnt in each session
3. identify areas in which you want to explore further
4. monitor your own progress
5. evaluate the whole aspect of this enrichment programme specially tailored for you

What is a reflective journal?

A reflective journal is a place where I can do a recollection of what I have done and reflect on what has happened. Also, it helps me to get in touch with my thoughts and my feelings. A reflective journal also allows me to think through what has happened and to help me understand myself better. - Felicia Ang, student- 403 (99)

- Returning to experience
  - Recalling or detailing salient events
- Attending to (or connecting with) feelings
  - Using helpful feelings
  - Removing or containing obstructive ones
- Evaluating Experience
  - Re-examining experience in the light of one's aims and knowledge
  - Entails integrating this new knowledge into /

Stages in the Reflective Process

- Responding or reacting to a situation
  - Status reporting
- Expanding on the response or reaction
  - Providing examples/ details
  - Making comparisons
- Reflecting
  - Impact on teaching/ learning, social/ ethical issues

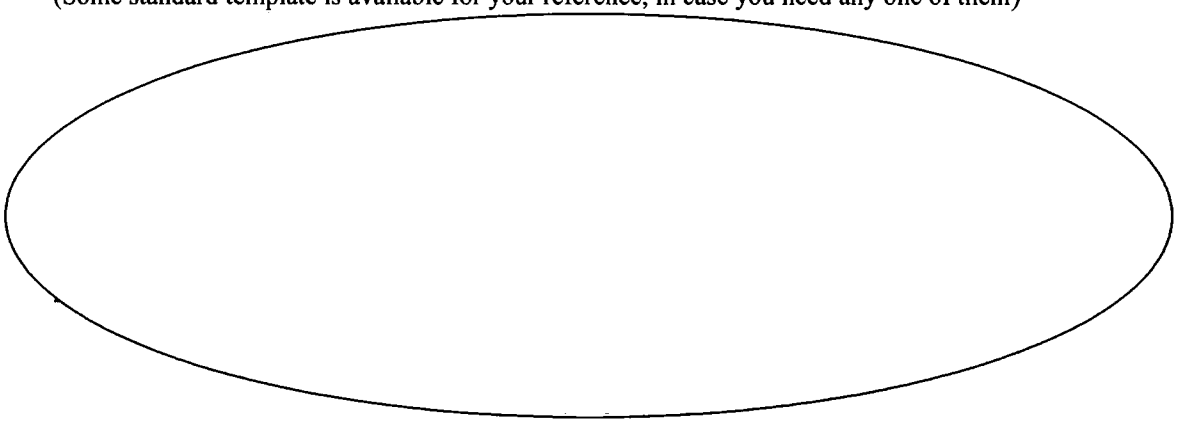
Component 1 - Overall concept of the STAR project and the Integrative aspect (Please Respond and Tick appropriately)

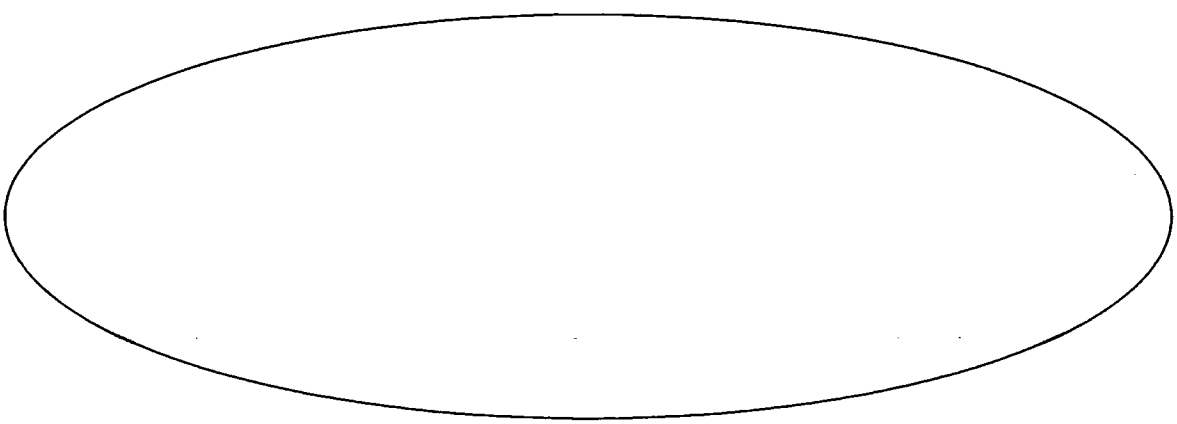
Activity/Items covered	Date/Time	Fully understood	Fairly understood	OK	Still unclear	Other remarks
Part 1 ◆ Briefing on the concept, objective of the STAR project ◆ SWAT team ◆ Concept of learning log and reflective journal						
Part 2 ◆ Purpose of Pre-test and post-test						
Part 3 ◆ Concept of attitude ◆ Reasons for the need to develop winning and positive attitude ◆ Two component of attitude ◆ Advantages of having good attitude ◆ Impact of our attitude on others ◆ Ways to adjust/renew attitude						
Part 4 ◆ Creative ways to problem solving ◆ Link between good attitude, productivity and national development ◆ Total Defence Concept ◆ National Education Messages ◆ Economic Literacy messages ◆ Universality of the achievement-oriented values ◆ Fostering better understanding, appreciation and ties with my friends of different races						

My views on this Reflective Journal

Reflect the whole process of the STAR project. Present your personal reflection in any form you like. It could be a drawing, a poem, jingle, slogan, a simple prose or in any form that you like. The limitation is your imagination.

(Some standard template is available for your reference, in case you need any one of them)





- What have I learnt about my own personal values?

- What is the most important value to me?

- What can I do to apply this value in my life?

- What are a few interesting things that I have learnt in this topic?

- What are some opportunities and challenges that I might encounter in this aspect of literacy?

- What can I do to enhance my technological literacy?

- Some specific strategies:

My Learning Style/Preference _____ (V A K)

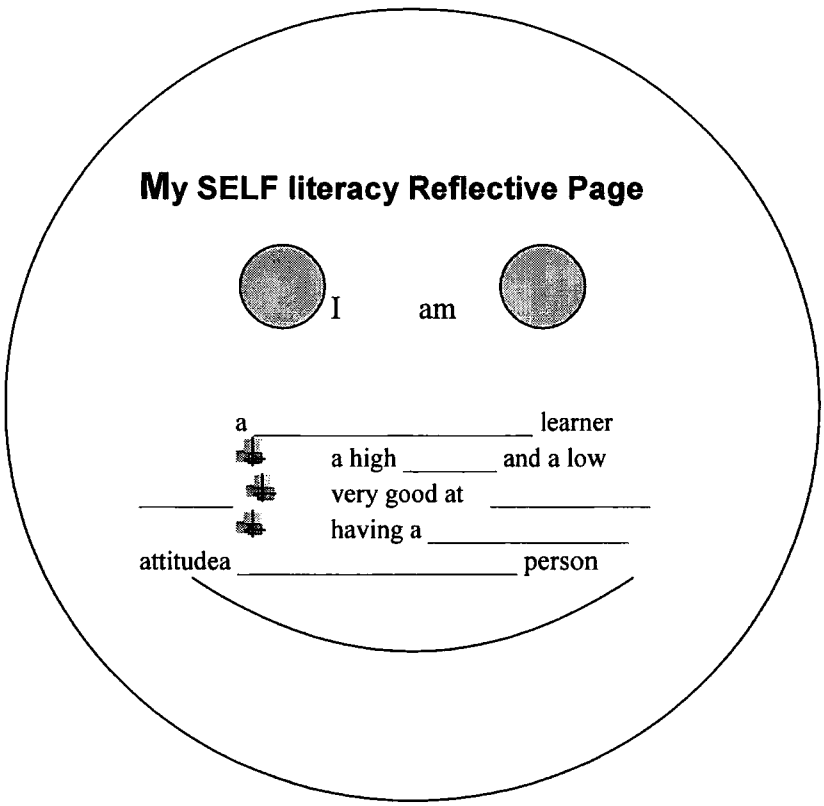
- In what way is economic literacy helpful to me?

Cultural Literacy

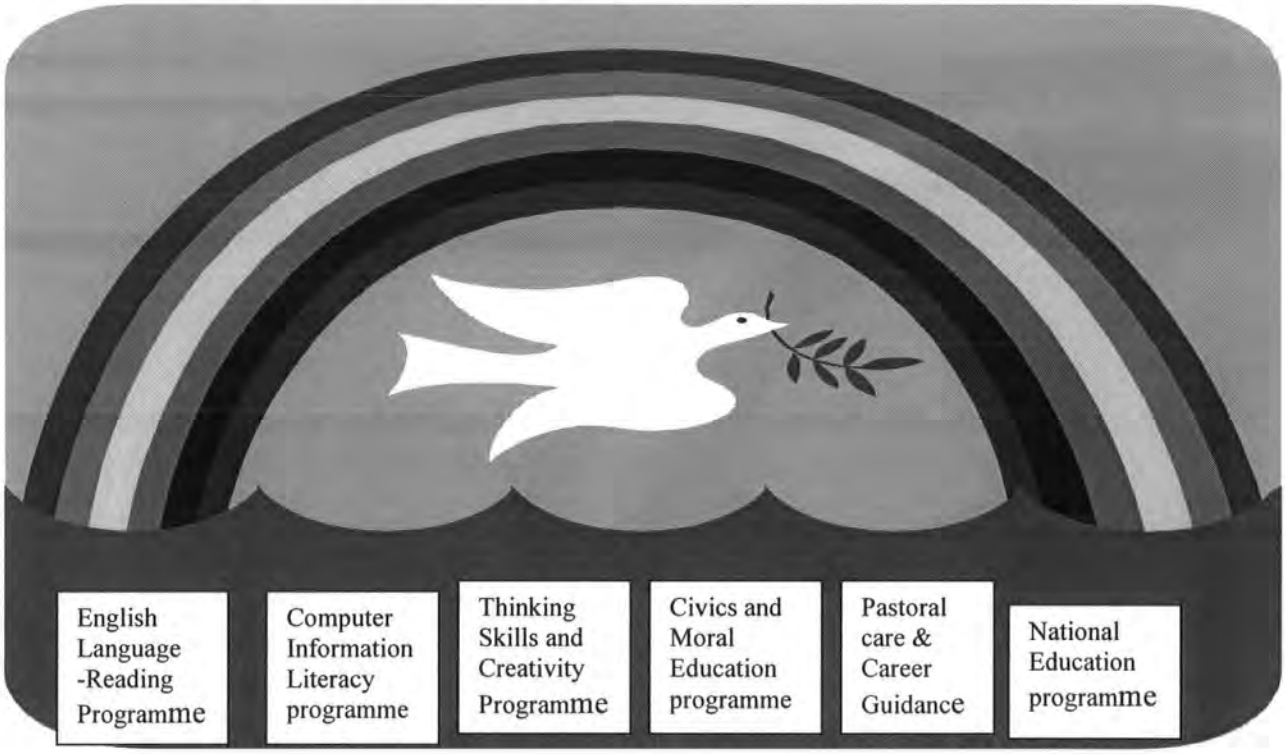
- The STAR Camp and the whole process of this STAR Project promote my understanding of my own culture, tradition and practices?

- Through this STAR project I learnt about other cultural practices such as…….

- What I see as factors that help to promote better racial ties in this school through the STAR Project



Appendix 9 –First version -Lesson Plan



Project Title:

Promoting and Integrating Electronic Information Skills through 5-in-1 Programme

(An Innovation Project conceptualised, developed and implemented by Mdm Bibi Jan Md Ayyub)

PING YI SECONDARY SCHOOL
MEDIA RESOURCE LIBRARY
5-IN-1 PROGRAMME

Summary of the lesson-objectives and Learner outcomes Grid
General Objectives and desired learner outcomes

Theme : winning and positive attitude	Level : Upper Secondary
Resources: CD ROM on Attitude for Success, Motivational Books, Extracts from Internet	Learner Outcomes
Unit Topic : Attitude for success	Suggested time frame : 10 hours
General objectives : Pupils will ■ develop and stimulate interest in reading for pleasure through the introduction of various CD ROMs that are of interest to them	Evaluation of General Objectives: Did the pupils ■ get stimulated in the given CD ROM and make attempt to do further reading through the exercise? ■ attempt to explore other non-conventional

■ make attempt to extend reading beyond the conventional means and place – that is beyond books and classroom settings (at least during the implementation of the programme) ■ appreciate the need to promote personal and social development through a careful choice of various personal development-based materials in and outside the school MRL ■ reinforce their PCCG skills and increase interpersonal relationship through group work or collective assignments ■ be able to demonstrate some desirable values and promote character building through the reading of selected contents materials and remain on task throughout the project ■ develop IT skills and familiar with the current global and national trend and prepare themselves for Singapore knowledge-based economy in the future ■	way of reading by going into the internet and visited the related sites as suggested in the given task sheets? ■ realise the need to focus on personal growth and development for their personal well-being? ■ collaborate and work well with their team members in the process of completing the task given in the project, which include the group project work? ■ practice responsible and ethical behaviour and show enthusiasm in completing all the tasks given throughout the programme? ■ Demonstrate basic computer and information literacy skills in the process of carrying out all the assignments and demonstrate initiatives in information problem solving and openness to learning?

Pupils' Assignment:

1) completing the task sheets provided
2) producing a simple pamphlet (This could be done in a group)
3) completing other group work indicated in the task sheets

Application of thinking and electronic information skills

Thinking skills

1. evaluating information
2. interacting and responding appropriately
3. organising the information and present it in the form of pamphlet/brochures

Learning and teaching materials

CD ROM, courseware, task sheet, navigation guide,
computer and worksheets

Learning environment

alternatives:

1. smart learning centre, computer lab, library
2. pupils do it individually at home or in school
3. pupils to form teams of 2 or 3 to work on one computer terminal, outside curriculum time
4. use it as part of the post examination activities

Information skills objectives:
The students will be able to do the following at different stages:

Appreciation

- ➢ view the various segments on Attitude for success
- ➢ listen to the explanation given by the presenters

Presearch

- ➢ creating web/outline which reflect their understanding on the meaning of attitude

- discussing the importance of attitude in daily life

Search

- use the given CD ROM to get more information
- completing the task sheet by searching relevant information
- organise the information required

Interpretation

- categorise the information as required
- see the possibility of applying the information to themselves

Communication

- determine the effective way of presenting the information
- creating pamphlets, fliers, poster, bookmark, simple banner, quotation, brochures etc.

Evaluation

- assess the benefits derived from such exercise
- suggest some ways to further improve the process

Lesson Plan

Topic: Attitude for success
Level: Sec 3Express
Duration: 2 hours per session
Term 1,3 (10 weeks – 20 hours)
Venue: Computer lab 3
Critical friends/peer mentors
Miss Hamidah
Mrs Leong

SIOs:

At the end of the lesson, pupils should be able to :

1. **Understand the concept of attitude**
2. **Appreciate the importance of positive and winning attitude in life**
3. **know the different aspects, components and elements in positive attitude**
4. **list various advantages of having positive attitude**
5. **identify various strategies to adjust or renew positive attitude**
6. **link between attitude and productivity and the relationship with the national goals**
7. **recognise the different forms of achievement-oriented values in manifested in different racial groups.**
8. **visit relevant website or read books on related theme as part of the follow-up reading activity**

Thinking/Presentation Skills:

1) Comprehension,
2) Categorisation
3) Cause-effect
4) Oral presentation

Materials required:

Workbook
Pre test
Reflective journal
CD ROM

Previous Knowledge:

Briefing on the STAR project, SWAT concept, the need for multi literacy was highlighted earlier and they also have to answer a series of questions as part of the pre test to measure the entry behaviours of the pupils.

Other materials given:
Notes on Summary of the topic

Lesson Phase Time	Topic/Content	Procedure/ Step-by-step instruction	Assignment/ Tasks
Phase 1 Finding meaning stage Introduction/ (Pre CD ROM viewing) (1hr)	• The concept of attitude • Symbolic representation of positive and winning attitude	• Teacher asked pupils what they understand about the concept of attitude • Oral discussion with the entire class • Proceed to make the mental association between any object to the meaning of attitude • Teachers get some pupils to share with the class • Teachers to ask pupils to fill up the word splash • Teachers to give the actual meaning of the concept attitude • Optional activity: They may want to surf net to do e research to find the meaning in the internet • BREAK BREAK Learning Log and Reflective Journal	• Pupils to give respond individually in the workbook • Pupils can either write, draw, to make such symbolic representation • Other pupils to record the choice of symbols used by others in their respective booklet • Pupils are to record all the explanation given by teachers and the group sharing
Phase 2a Thinking through stage CD Rom viewing (This will take 1-2-hr	Pupils to see the difference between positive and negative attitude How it affect 4 aspects of our lives ❖ 2 dimension of attitude ❖ advantages of having good attitude ❖ 8 ways of adjusting attitudes	1. Instruct pupils to turn on CD ROM 2. Explain briefly the structure, content and layout of the CD ROM 3. Pupils are given choice to see the static text prepared in the software to see the video snippets as presented to the user.	Pupils to install programme in their terminal As they listen or read, they are to fill up the correct information as structured in the booklet They may want to ask teacher or fellow friends if they encounter any technical difficulties Pupils to complete worksheet related to this main point
Phase 3 Internalisation and application (30 mins)	❖ Pupils to look and reflect at their own personal values and attitude They are to find their own score of mental misery Pupils are required to do a case study to help Rozy their classmates to solve problems using the	1. Instruct pupils to click to the links to find their score 2. Pupils are to read 3 true-story articles extracted from the website on similar theme and they are to me up with their own personal experience of positive attitude in them Learning Log Entry	❖ Fill up the score accordingly as specified in the workbook ❖ Pupils to jot down in the booklet
Phase 3 Internalisation and application (30 mins)	Pupils to personal reflection and to see what they have learnt throughout the whole session	1. Instruct pupils to proceed to page 23 of the workbook on module 1 and carry out the 3-2-1 exercise	❖ Completion of page 23

Phase 4- Re constructing and Exploring Part 2 Seeking Treasure within us Part 3 The designing of leaflet by a students leader to welcome the secondary one students during the orientation Part 4 of phase 4 The link between National Education and the STAR project	To provide opportunity to pupils to constructs their own learning The universality of this achievement –oriented values This is a part of English Language guided composition/ expository text ❖ Pupils to understand the concept of Total defence, which include the NE messages . ❖ Highlight the issue of vulnerability of Singapore, the small and open market of our economy, the need to develop our only resource: human and the need to develop Knowledge worker ion this KBE world	❖ Pupils are to relate any story where adversity was turned to an advantage. ❖ Share with pupils the concept of adversity quotient as proposed by Paul Stolz ❖ Inform pupils that this phenomenon is not merely a western values as they thought it could be based on the CDROM they view and the available literature in the internet or the vast personal development books written by western writers. ❖ Instruct pupils to read the cartoon strip as given by teachers and based on that they are to see the link between positive attitude and economic defence	❖ Pupils to fill up page 24 ❖ Pupils are to complete the assignment on page 25 as a group work. This could be found on page 26 of the booklet Pupils to complete the assignment written on page 27

Appendix 10 - STAR Camp Evaluation (students' and, trainers' feedback)

28/05/2002 -Overall assessment of course =

39% Good
61% Excellent

Overall assessment of lecturers =
34% Good
66% Excellent

Comments:- Positive points

1. ***Trainers : They were humorous, funny, dedicated, friendly, cool, interactive, they gave good interesting presentation, and they explain clearly***
2. ***Programme – The overall was camp was enjoyable and majority of the students benefit***
3. It is an eye-opener. The camp is very interesting.
4. Provides multiple knowledge
5. Food – The food was tasty and delicious (The curry was good) (we got a lot of sweets)
6. Venue - It was spacious, air condition, full of spirits & convenient
7. Games – It makes us mix with other people with different race and culture and levels
8. Music – The music was very motivating and inspired us to strive on (The song was very nice)
9. Overall impression and value of the camp to participants

NEGATIVE POINTS

1. Not much of outdoor activities
2. There was too much lecture
3. Not much games
4. Very little breaks
5. The noises made by the upper secondary students exceeded the expected noise
6. No chance to talk with friends

(Recommendation/suggestions from students)

To have more of such courses in near future that will benefit all the students

1. Useful for building relationship, especially on fostering racial ties
2. However 2 days were a bit too short. More structured programmes should be arranged
3. Course is too short, practical workshop is good - build rapport. Quite a thought-provoking course. Needs a lot of thinking.
4. Good facilitators. Able to inspire and generate interest to the class. Better understanding and knowledge being an effective trainers
5. Interesting, useful, ability to inspire the class to participate the activities.
6. Clear and precise in presentation. Facilitators were able to present the subject well. If could be better if attend to 3 days course as the facilitator had to rush through some of the pointers due to time constraint
7. More outdoor activities should be held to add greater variety
8. Improve on the food, with more budget
9. Lectures should be shorter and more should be focussed on hands- on sessions
10. Preferably not to combined students from different levels.

Things learnt

1. Knowing ourselves better
2. Understanding the meaning of Attitude
3. Discovering our strengths, passion, interest & our personal personality profile
4. Understanding meaning of moral maturity

5. Improving English language proficiency
6. to develop confidence and public speaking
7. the need to grab available opportunities in this highly competitive world
8. good reality check and sharing
9. Bring about Greater awareness of Global Technological Development
10. A lot of opportunity for Creativity, especially during the group work and other written assignments
11. Discussion on -Service learning
    -Business venture
    Entrepreneurship Programmes

For teachers and trainers

- ❖ The need to master NLP for effective presentation and delivery
- ❖ Earlier preparation and planning will definitely help the smooth and effective running of this camp
- ❖ Distribution of work given to the pupils must be done earlier and proper briefing must be conducted especially among the members of the STAR Learning Circles.

More sessions of post mortem should be conducted with the learning circle members and the trainers to see what else could be done to improve the future activities and the camp

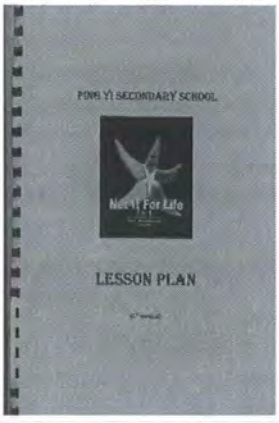
Appendix 11- The Scope of STAR and List of Directory of In–House Production Of Resource Materials - (1999 to 2003)

PART 1 – THE MAIN STAR PROJECT

1. Star Project Package

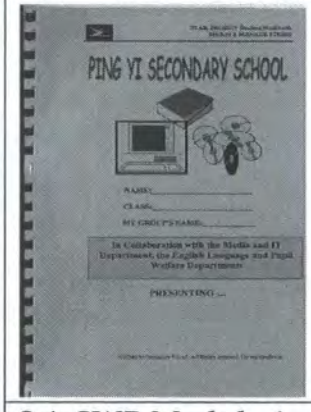
1.1. Star Concept Paper (1999)

1.2. Star Lesson Plan (1999)

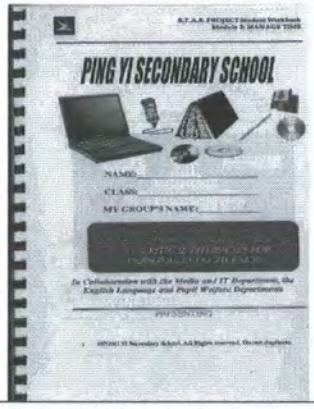


2. Star Workbook (SWB)

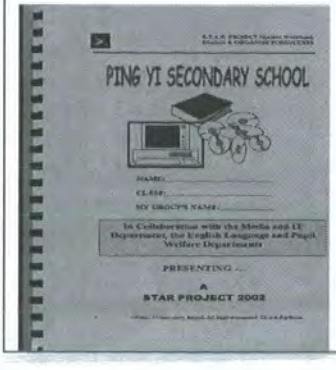
2.2. SWB Module 2 – Manage stress



2.3. SWB Module 3 – Manage time



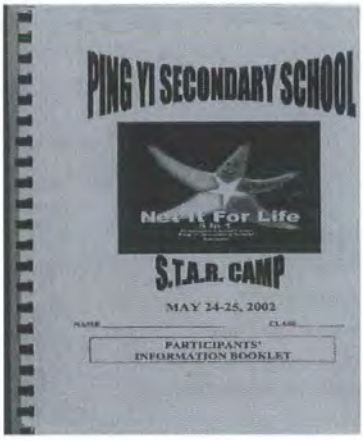
2.4. SWB Module 4 –Organise for success



2.5. SWB Module 5 – Effective communication

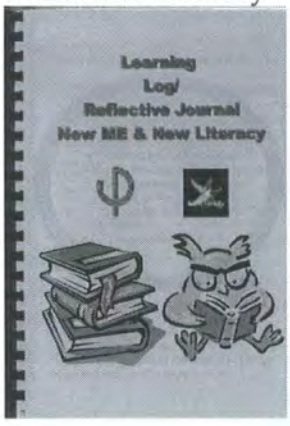
3. Star Camp

3.1. Star Camp Booklet



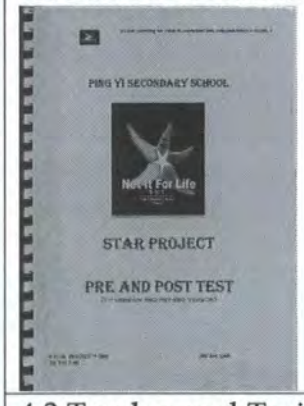
3.2. Pre Camp Briefing .9. Itopia - Learn @School (July 2002)

3.3. Camp Reflective Journal- New Me with New Literacy

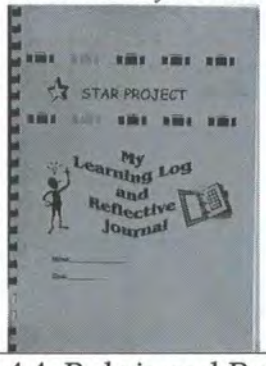


4. Star Project Assessment Tools

4.1 Star Pre Test and Post Test



4.2. Pupil's Learning Log and Reflective Journal

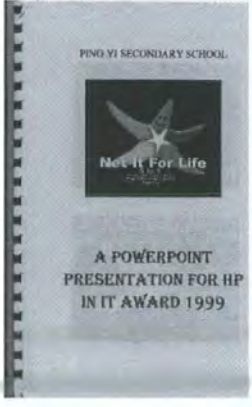


4.3 Teacher and Trainers' Reflective Journal

4.4. Rubric and Performance Indicators

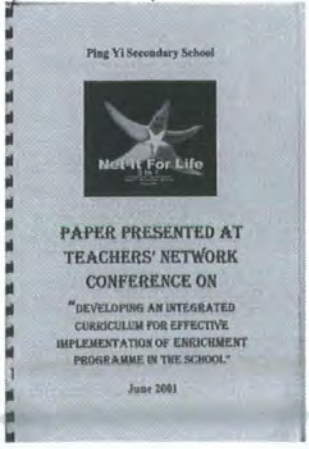
5. Star Presentations and Publications

5.1 Submission for HP INIt Competition (Dec 99)



5.2 Regional educational Conference at Prince of Songkhla University (99)

5.3. TN conference (June 2001)



PART 2 – STUDENTS' PROJECT WORK AND ENRICHMENT PROGRAMMES

3. Star Project Enrichment Programme

3.2.STAR .COM our own learning portalwebsite

3.3. Star Reading catalogues (Online is available)

3.3.1. Teachers' Resources

3.3.2. Pupils' Resources

3.4. Star Read, Evaluate and Share (RES) Programme

3.4.1. Book Review by Iskandar (201)

3.4.2. Giant Step Volume 1 and II by Hafiz, and SuZhen (413)

3.4.3. Collection of Stories by Renganathan (204)

3.4.4. Think like a Winner by Nordin

3.4.5. Zig Zagler summary by Fatimah

3.5.Star Quotations

3.5.1. Malay Proverbs on achievement-oriented values by Husna (311)

3.5.2. Inspirational and motivational quotations

3.5.3. Moral Values from Thirukurral by Lakshmi (413)

3.5.4. Quotable Quotes by Diana (204)

3.6. Star Games

3.6.1. Value Scrabble

3.6.2. Snake and Ladder

3.6.3. Animal Character Board Game

3.7.Star Newsletter (Star online)

3.7.1. Volume 1 (June 2002)

3.7.2. Volume 2 (September 2002)

3.7.3. Volume 3 (Jan 2003)

PART 3 – THE FOLLOW-UP ACTIVITIES

4. Star Follow-up Activities

4.2. Entrepreneurship Programme

4.2.1. Entrepreneurship Article by Kenneth Ow (203)

4.2.2. Economic Literacy (MOE)

4.2.3. Collection of stories of the Movers and Shakers

4.2.4. A collection of success stories

4.3.Service learning

4.3.1. Reading for Service Leaning

4.3.2. Report by the Learning circle leader Laxmi and the team on Service Learning in YMWA- Mendaki Child Care /FSC centre

4.4.Job Shadowing Programme

4.4.1. Job Shadowing for Teachers

4.4.2. Virtual Job Shadowing

4.4.3. How to have a successful Groundhog Job Shadow Day

4.4.4. Ping Yi Job Shadow, headed by Rashad and team at UOB Securities

4.4.5. Ping Yi Job Shadow, headed by XiuTing, Kellie, and the team at the trading import and export company

4.4.6. Ping Yi Job Shadowing, headed by Samsani, Ahmad Syed and the team at Datco